# X'PRESS

## Revision in Short Cases

### Aids to Undergraduate Medicine

Painless and Enjoyable Way to Revise

Chew Nee Kong
Lim Kheng Seang

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## Revison

## in Short Cases

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## Aids to undergraduate Medicine

**Painless and Enjoyable Way to Revise**


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*This book is specially dedicated to*
*my mother, Mdm. Lee Mau Nol, who has taught me what true love*
*is all about*


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# CONTENTS

# FOREWORD

In addition to preparing medical students for the MBBS examination, this book has been written to aid medical students in understanding and consolidating their foundation in Medicine. The ultimate objective of this book is to produce a generation of young doctors who are able to provide the best health services to the Malaysian community. This is in line with the main objective of the Faculty of Medicine, namely to provide the best and most qualified young doctors who will significantly contribute to the well-being and health status of the Malaysian society.

One of the sources of inspiration for the writing of these books is YB Kept. Dato' Professor Dr Hashim Yaacob PSSTLDM, the present Vice-Chancellor of the University of Malaya, who has constantly encouraged all the UM academic staff to produce educational books for the undergraduate and postgraduate training. This approach will certainly elevate the status of University of Malaya as the premier teaching institution in Malaysia.

Dato' Professor Mohd Amin Jalaluddin
Dean
Faculty of Medicine
University of Malaya.

# PREFACE

A key strategy in any medical examination is familiarity with the common questions. Somehow, the spectrum of medical cases in examinations is rather standard, and even the questions asked by examiners are quite predictable. Therefore, this book will prove to be extremely useful for quick revision before the final exam.

As this book is very exam-oriented, I have to remind the students that the differential diagnoses that I have listed for each case may be different from what they encounter in their daily medical practice.

All the illustrations in this book are taken from the original collection of the authors and contributors. Every patient, when recognizable on his or her photographs, has given written permission for this publication.

Dr Chew Nee Kong
21st January 2006.


**"I'm on my way to SHAKE THE WORLD!"**

# ACKNOWLEDGEMENTS

First and foremost, I would like to Dr Lim Kheng Seang for his kind assistance in helping me to write this book.

I would like to thank Dato' Professor Mohd Amin Jalaluddin, the Dean of Faculty of Medicine, University of Malaya, for writing the foreword for this book.

I'd like to extend my gratitude to the following persons /colleagues:

The staff of UM Press, especially Assoc Professor Dr Hamedi Mohd Adnan, Mdm Zaini Ahmad Arif and Ms Norhapipah Satam for their assistance.

All the patients who have given me their co-operation.

All the staff of the Medical Illustrations, UM for their kind assistance in taking the photographs of my patients.

Ms Aletheia Lim Shi Yun (Year 5 Medical Student) for her creative and constructive comments.

Mr Kevin Lunsong, Ms Lim Hooi Hoon and Mr Md. Arifin Zainal (Medical Illustration, UM) for their great help in the doing the lay-out of this book.

Mr Andrew Martin, Mr Fadzly Ramidi (Year 4 Medical Student), Ms Lee Sze Yuen (Year 4 Medical Student) and Mr Mohd Shaharol Mohd Salleh, for creating the illustrations (cartoons) for this book.

Mr Anthony Thanasayan, who has been a source of inspiration to me in writing this book.

All the known or anonymous authors who have contributed to the mnemonics in this book.

All the dedicated academic staff of Faculty of Medicine, University Malaya (1986-1991), who have been my great teachers.

Dr Chew Nee Kong

# MEMOIR OF TAN SRI DATUK PROFESSOR EMERITUS TJ DANARAJ

*"If you met a patient at the Emergency Room, who complained of severe chest pain that was not relieved by two doses of IV Morphine, always consider the possibility of dissecting aneurysm of the aorta".*

Those were his very own words that I have always remembered since the memorable lecture back in 1991. I was a Final Year Medical Student then. Being fresh and naïve, all of us were always very anxious whenever a very senior Professor walked into the lecture hall, especially when the Professor never smiled at us. We were worried about giving stupid answers to his relentless questions. But gradually, our fears subsided when he showed us the "fatherly" figure in him. As he went through many, many interesting slides with us, we started to enjoy his lectures.

He was already in his late seventies, and walked slowly with a stooped posture. Despite his advanced age, his teaching skills and energy were simply outstanding. While explaining to us about the various physical signs in Medicine, he would walk from one end of the lecture hall to the other. For me, that was a *cardinal sign of enthusiasm and dedication.*

And that was the last time he taught me.

He passed away on the 19th March 1996, at the age of 82. Despite this, his presence has continued to be felt by all of us in the Faculty of Medicine till today. Many medical students who have graduated from this faculty have been inspired by this great man, and eventually became excellent and prominent clinicians in the country.

He was Tan Sri Datuk Professor Emeritus Thamboo John Danaraj, the founder of the Faculty of Medicine, University of Malaya. He was the man who started it all, and made us as what we are today. I am sure that God has blessed him with happiness and peace in heaven.

And his spirit, energy and enthusiasm continue to be with us till today...

May his soul rest in peace....

*The most important lesson that I learnt as a former medical student in the Faculty of Medicine, University of Malaya (1986-1991), is the very fact that teaching Medicine is merely a secondary objective of academic staff; their primary duty is to become the* ***role models for all the medical students.*** *And that was exactly what Tan Sri Datuk Professor Emeritus Thamboo John Danaraj had achieved.*

Dr Chew Nee Kong

The legendary and true academician - the late Tan Sri Datuk Professor Emeritus Thamboo John Danaraj (1914-1996)

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## HOW TO USE THIS BOOK

Each case is graded in terms of frequency encountered in the exam:
**★ = rather common, ★★ = common, ★★★ = very common.**

**Plan A** Early starters (> one month before the exam) - read all 60 cases

**Plan B** Late starters - read only the cases rated ★★ and ★★★

**Plan C** Opportunists - quick revision on the day before the exam, read the boxes: 

| Cases (Page) | Rating | Cases (Page) | Rating |
|---|---|---|---|
| **1) Neurology** | | Interstitial lung disease (122) | ★ |
| Bifacial weakness (2) | ★ | Bronchiectasis (123) | ★ |
| Ophthalmoplegia (8) | ★★ | Pleural effusion (124) | ★★★ |
| Parkinsonism (11) | ★★★ | **6) Rheumatology** | |
| Cerebellar syndrome (14) | ★★★ | Rheumatoid arthritis (126) | ★★★ |
| Unilateral facial weakness (15) | ★★ | Ankylosing spondylitis (130) | ★ |
| Speech disorders / dysphasia (19) | ★ | Dermato- / Polymyositis (133) | ★ |
| Myelopathy (23) | ★★★ | Scleroderma (134) | ★ |
| Wasting of small muscles of the hands (26) | ★ | Systemic lupus erythematosus (137) | ★★ |
| Tremor (28) | ★★★ | **7) Gastroenterology** | |
| Pseudobulbar / bulbar palsy (29) | ★ | Hepatomegaly (142) | ★★★ |
| Proximal muscle weakness (30) | ★★ | Splenomegaly (143) | ★★★ |
| Stroke (33) | ★★ | Chronic liver disease (144) | ★★★ |
| **2) Endocrinology** | | Abdominal masses (147) | ★★ |
| Acromegaly (38) | ★★ | Jaundice (148) | ★★★ |
| Thyrotoxicosis (41) | ★★★ | Ascites (150) | ★★ |
| Cushing's syndrome (44) | ★★★ | **8) Infectious Disease** | |
| Marfan's syndrome (48) | ★ | HIV infection (154) | ★★ |
| Hypopituitarism (51) | ★ | **9) Cardiology** | |
| Hypothyroidism (54) | ★ | Eisenmenger's syndrome (163) | ★ |
| **3) Dermatology** | | Infective endocarditis (164) | ★★ |
| Erythema multiforme / Stevens-Johnson syndrome / Toxic epidermal necrolysis (58) | ★ | Cardiac murmur (168) | ★★★ |
| Pemphigus / Pemphigoid (59) | ★ | Hypertension (173) | ★ |
| Neurofibromatosis (60) | ★ | Atrial fibrillation (175) | ★★ |
| Psoriasis / Psoriatic arthritis (63) | ★★ | Angina (177) | ★★ |
| **4) Hematology** | | Acute myocardial infarction (179) | ★★ |
| Thalassemia major (100) | ★★★ | Prosthetic heart valves (180) | ★★★ |
| Lymphadenopathy (103) | ★★ | **10) Nephrology** | |
| Deep vein thrombosis (106) | ★★ | Chronic renal failure (184) | ★★★ |
| Anemia (108) | ★★★ | Polycystic kidney disease (187) | ★ |
| Easy bruising (111) | ★ | **11) Fundoscopy** | |
| **5) Respiratory system** | | Diabetic retinopathy (192) | ★★★ |
| Asthma (116) | ★★★ | Hypertensive retinopathy (194) | ★ |
| Chronic obstructive airway disease (117) | ★★★ | Optic neuritis / Papilledema (195) | ★★★ |
| Bronchogenic carcinoma (119) | ★★ | Optic atrophy (196) | ★ |

# SECTION 1

# CHAPTER 1 – NEUROLOGY

## CASE 1 BIFACIAL WEAKNESS

• if you saw a patient with **reduced facial expression**, consider the following:
a) *extrapyramidal disorder* (parkinsonism) - tremor, good eye contact.
b) *psychogenic disorder* (depression) - no tremor, poor eye contact.
c) *pyramidal disorder* (bifacial weakness) - no tremor, good eye contact.



### *Common causes of bifacial weakness in exam*

• commonest - **Myasthenia gravis** (MG), **Guillain-Barre syndrome** (GBS).

| Clinical features | Guillain-Barre syndrome | Myasthenia gravis | Dystrophia myotonica | Facioscapulohumeral dystrophy |
|---|---|---|---|---|
| Family history | absent | absent | autosomal dominant | autosomal dominant |
| Ptosis / ocular palsy | absent | present | present | absent |
| Limb weakness | proximal or distal | proximal | distal | shoulder girdle **bilateral scapular winging** |
| Reflexes | **absent** | **normal or brisk** | reduced or absent | normal |
| Fatigability | absent | **present** | absent | absent |

### *Guillain-Barre syndrome*

• acute demyelinating peripheral neuropathy.
• autoimmune-mediated (post-infectious etiology - *C. jejuni*).
• predominantly motor deficits (mild or absent sensory signs).
• investigations:
  - cerebrospinal fluid (↑ protein, normal white cell count).
  - nerve conduction study (↓ conduction velocity).
• treatment - plasma exchange (PE), IV immunoglobulin (IVIG).

### *Myasthenia gravis*

• autoimmune-mediated neuromuscular junction disorder.
• preferentially involves the ocular, facial and bulbar muscles.
• associated disorders - diabetes mellitus, thyrotoxicosis, thymic hyperplasia (65%) and thymoma (15%).

*VIP!*

GBS and MG are important causes of **acute neuromuscular respiratory failure**

- investigations:

  Edrophonium (Tensilon) test
  Ach receptor antibody
  Repetitive nerve stimulation test (decremental response)
  Blood glucose, thyroid function
  Anti-striated muscle antibody (marker for thymoma)
  CT thorax (thymic mass)

> *VIP!*
>
> Commonest causes of bifacial weakness in exam - **MG and GBS**

- treatment:
- symptomatic - anticholinesterase inhibitors.
- specific - steroid, thymectomy, PE, IVIG (the latter two for myasthenic crisis).

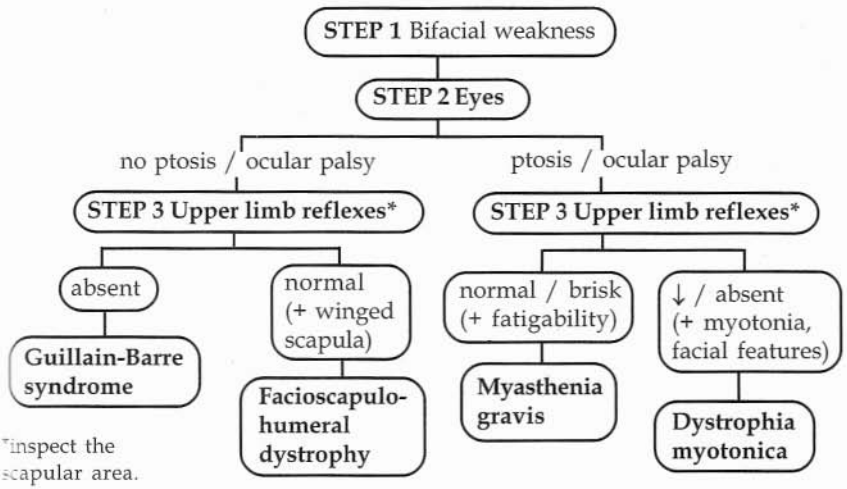
### *Facioscapulohumeral dystrophy (FSHD)*

- affects facial, scapular and humeral (deltoid, biceps, triceps) muscles.
- investigations - serum creatine kinase (CK), electromyography (EMG), muscle biopsy.
- specific treatment - nil.

### *Dystrophia myotonica (DM)*

- characteristic **facies** (Fig. 1.2-3 - Section 2) and **myotonia** (Fig. 1.4-5).
- unlike other muscle disorders, the **reflexes are reduced or absent.**
- complications - cataract, arrhythmia (heart block), cardiac failure, hypogonadism, diabetes mellitus.
- investigations - serum CK, EMG ("dive-bomber" sound).
- treatment - symptomatic (phenytoin).

Note: Muscle biopsy is not useful in DM because the findings are non-specific.



# DYSTROPHIA MYOTONICA



"This diabetic man has weakness of hands - examine him"

*Look out for a bald man who can't let go your hand!*


**Face**
*Frontal balding*
*Wasting of temporalis*
*Bilateral ptosis*
*Bifacial weakness*
*Wasting of masseter*
*Elongated face*
*Pouting lower lip*

**Eyes**
Cataract
Diabetic retinopathy

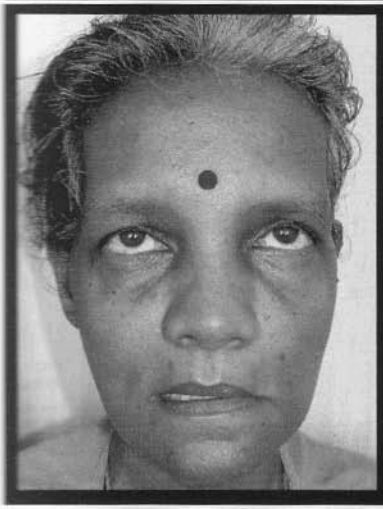
**Neck**
Wasting of sternomastoid muscles ("swan neck")

**Chest**
Gynecomastia (hypogonadism)
Gallop rhythm, basal lung crackles - cardiac failure

**Hands**
*MYOTONIA!*
Wasting of small muscles
Radial pulse - arrhythmia

**Excuse me Sir, I would like to complete my examination by checking the following:**
Loss of axillary and pubic hair (hypogonadism)
Blood glucose
AND asking for family history of muscle weakness

## CASE REPORTS



**PATIENT 1** Acute generalized limb weakness for two days. **Findings**: Bifacial weakness (Fig. 1.1) and ***generalized areflexia. No ptosis or ocular palsy or*** sensory signs. **Diagnosis**: *Guillain-Barre syndrome.* **Progress**: Subsequently ventilated due to acute neuromuscular respiratory failure (ANRF).

**Comments**: Guillain-Barre syndrome is a neurological emergency - 25% of patients develop ANRF.

**Fig. 1.1** "Smile and wrinkle your forehead".

**PATIENT 2** This diabetic man and his brother had progressive bilateral hand weakness for many years. **Findings** (Fig. 1.2-3 - Section 2, Fig. 1.4-5): ***Myotonia,*** frontal balding, ptosis and bifacial weakness. Reflexes were reduced. **Diagnosis**: *Dystrophia myotonica (DM).*

**Comment**: DM is essentially a spot diagnosis.

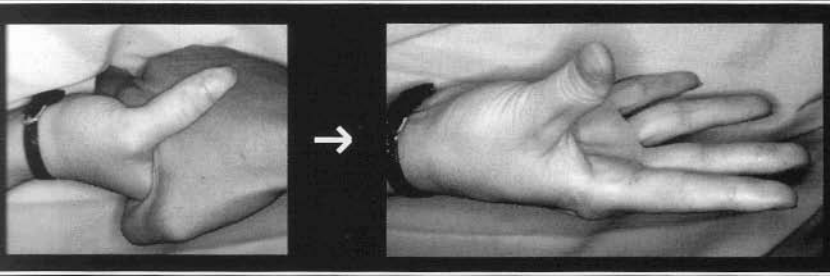


**Fig. 1.4 Myotonia** - delayed relaxation of muscle after contraction.

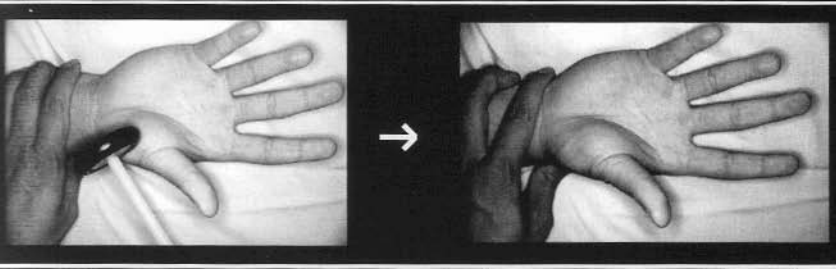


**Fig. 1.5 Percussion myotonia** - tapping the thenar eminence muscles leads to abduction of the thumb.

I never make the mistake of arguing with people for whose opinions I have no respect - Edward Gibbon

**PATIENT 3** Acute generalized limb weakness. **Findings**: Bifacial weakness (Fig. 1.6), bulbar palsy, ***bilateral ptosis / ocular palsy*** (which improved with Tensilon test) and ***normal reflexes*** / sensation. **Diagnosis**: *Generalized MG.*

**Comments**: Absence of facial weakness does rule out MG - 10% of patients have only ocular muscle weakness (ocular MG).

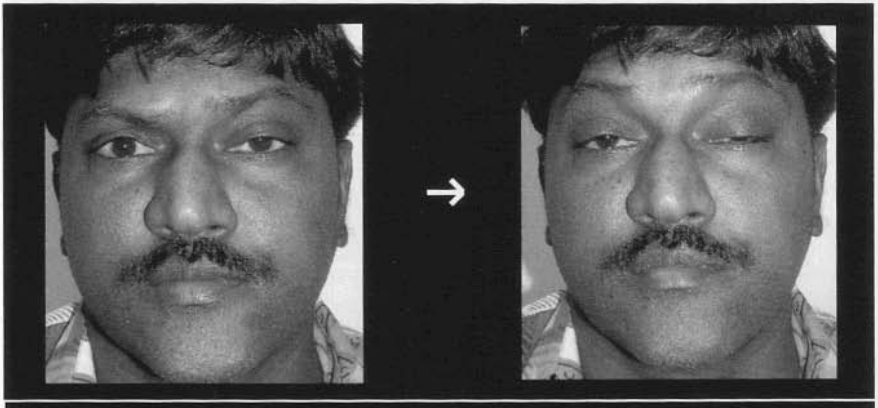


**Fig. 1.6** *Left*: "Smile and look upwards for one minute" - absence of nasolabial folds, wrinkling of forehead and upward eye movement. *Right*: Fatigability of levator palpebrae muscles.

**PATIENT 4** 37-year-old man with progressive proximal muscle weakness for 15 years. His father and four siblings are also affected. **Findings** (Fig. 1.7-9): Bifacial weakness, ***bilateral scapular winging, "Popeye arm" sign, "angel-wing" appearance*** and normal reflexes. **Diagnosis**: *FSHD.*

**Comment**: Bilateral scapular winging is highly characteristic of FSHD.

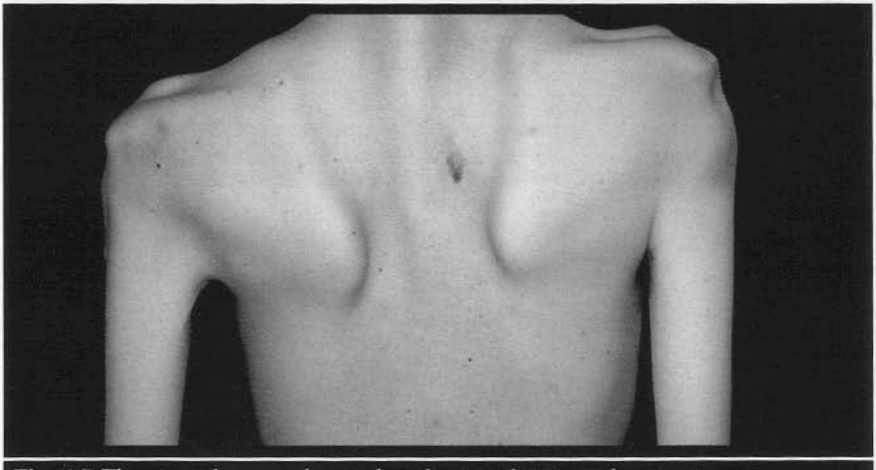


**Fig. 1.7** The scapulae are elevated and rotated outward even at rest.

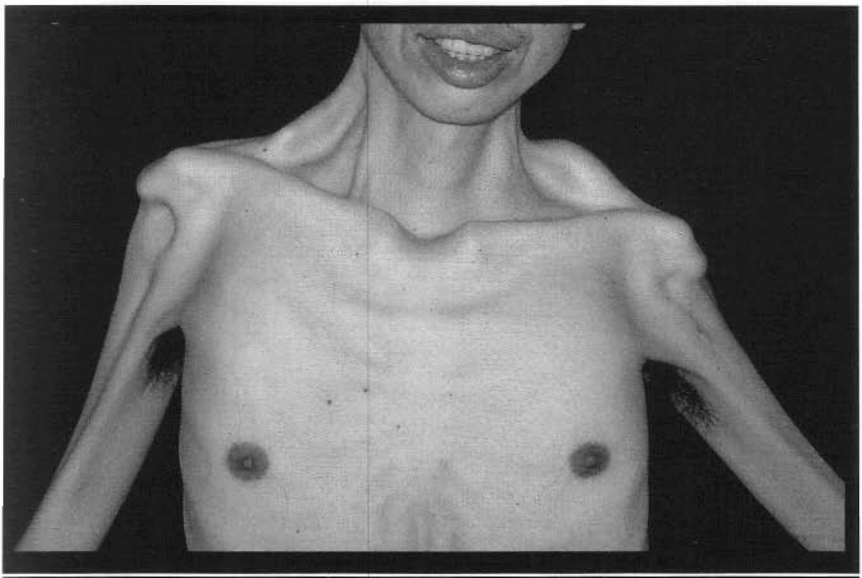


**Fig. 1.8** When abducting both arms, the scapulae rotate up and out and can be seen from the front by examiner - the "angel-wing" appearance. The bones of the shoulders are prominent due to wasting of the deltoid muscles. Also note the wasting of the pectoralis major, biceps and triceps muscles.

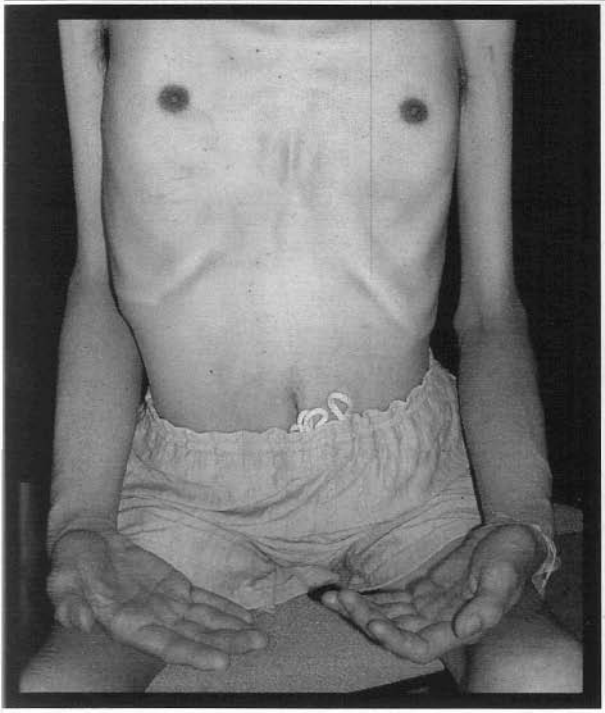


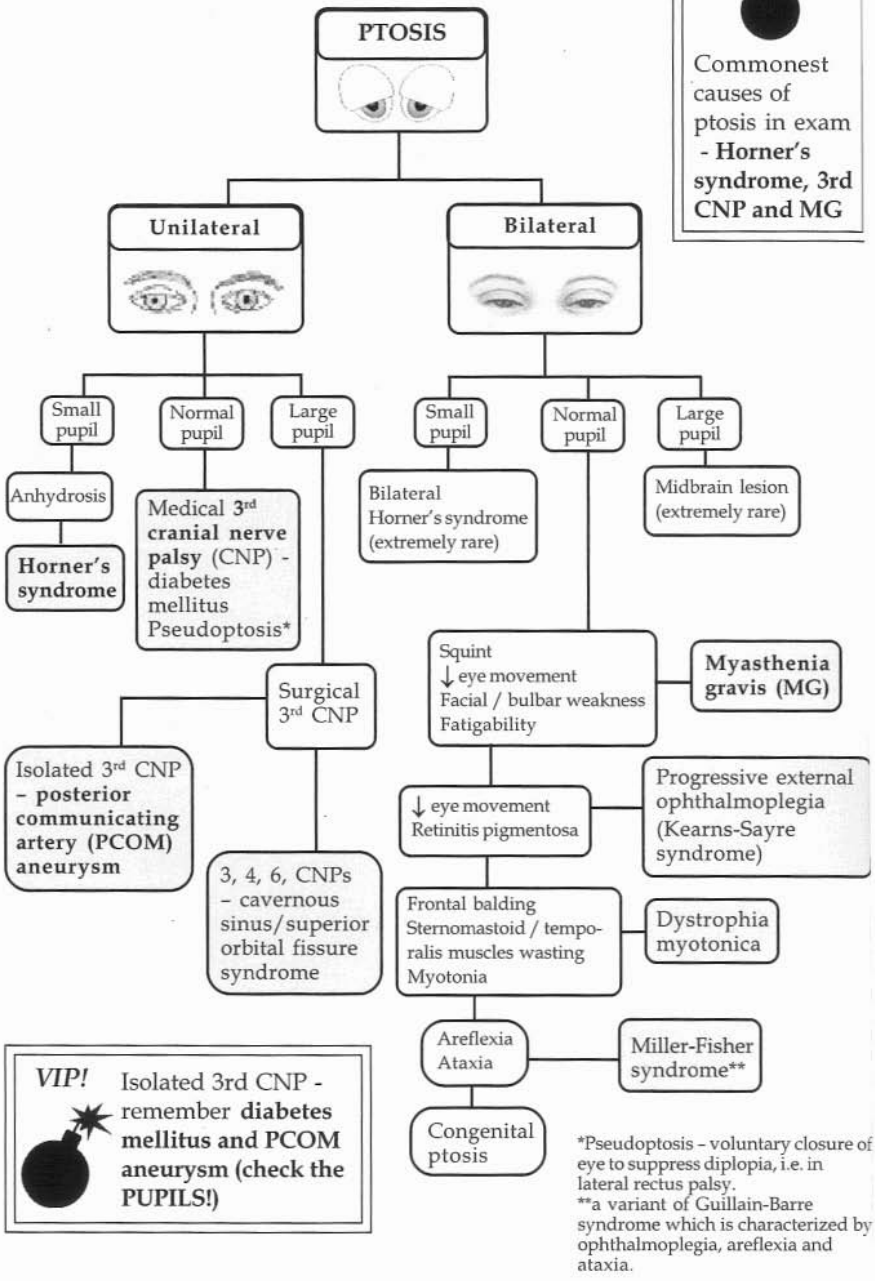
**Fig. 1.9 "Popeye arm"** effect - the upper arm is thinner than the forearm due to the marked wasting of the biceps and triceps muscles. The small muscles of the hands are spared.

If you can't imagine it, you can't do it - John F Kennedy

# CASE 2 OPHTHALMOPLEGIA

## PTOSIS

- check the **PUPILS** first.




*VIP!* Commonest causes of ptosis in exam - **Horner's syndrome, 3rd CNP and MG**

*VIP!* Isolated 3rd CNP - remember **diabetes mellitus and PCOM aneurysm (check the PUPILS!)**

*Pseudoptosis – voluntary closure of eye to suppress diplopia, i.e. in lateral rectus palsy.
**a variant of Guillain-Barre syndrome which is characterized by ophthalmoplegia, areflexia and ataxia.

## CASE REPORTS

**PATIENT 1** Acute onset of right ptosis (Fig. 2.1). **Findings**: Right pupil - ***dilated*** (Fig. 2.2 - Section 2). Cerebral angiogram (Fig. 2.3) - right "surgical" 3rd CN palsy due to *PCOM artery aneurysm.*

**Comments**: Urgent surgical clipping of PCOM aneurysm is vital to prevent rupture ⇒ **subarachnoid hemorrhage!**

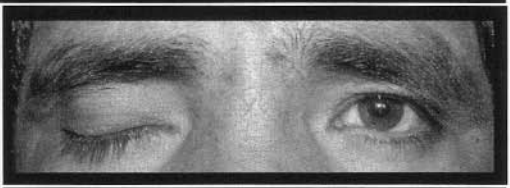


**Fig. 2.1** Complete ptosis of right eye.

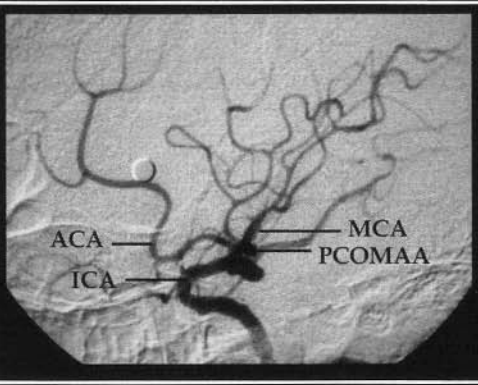



**Fig. 2.3** Conventional cerebral angiogram; PCOMAA=PCOM artery aneurysm, ACA= anterior cerebral artery, MCA=middle cerebral artery, ICA=internal carotid artery.

**PATIENT 2** Acute onset of cerebellar ataxia. **Findings**: ***Right miosis*** (Fig. 2.4 - Section 2). ***Loss of pain sensation*** on right side of face and contralateral body. CT brain - infarction of right cerebellum and medulla. **Diagnosis**: *Right Horner's syndrome (Wallenberg syndrome).*

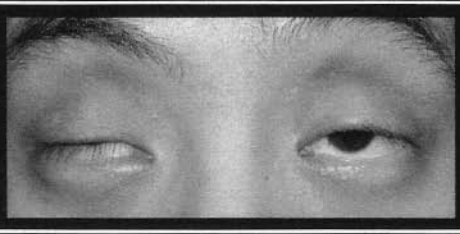


**Fig. 2.5** "Look at the examiner".

**PATIENT 3** Young man with progressive diplopia (Fig. 2.5) for one year. **Findings**: ***Pupils - normal.*** No response to pyridostigmine. Muscle biopsy - ragged red fibers (mitochondrial disease). **Diagnosis**: *Progressive External Ophthalmoplegia.*

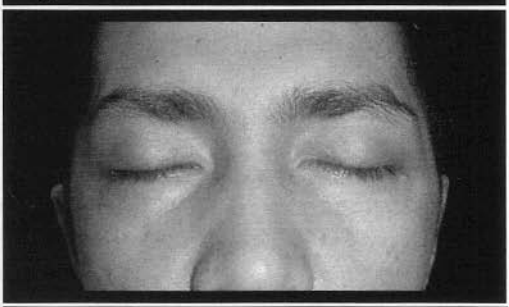


**Fig. 2.6** "Look upwards".

**PATIENT 4** Young man with acute onset of ***ataxia*** and diplopia. **Findings**: Bilateral ocular palsy with ptosis (Fig. 2.6), ***normal pupils*** and generalized ***areflexia.*** **Diagnosis**: *Miller-Fisher syndrome.*

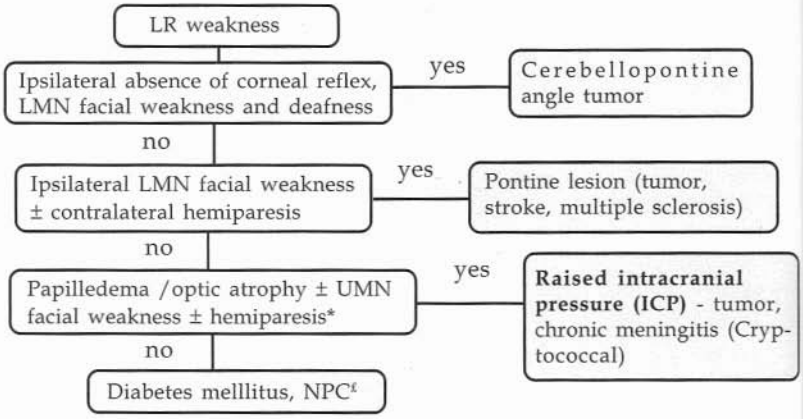
Those who dare to fail miserably can achieve greatly - Robert F Kennedy

## DIPLOPIA

- the commonest exam cases are neuromuscular / muscular disorders, 3rd cranial nerve palsy (CNP) and 6th CNP. The first two cases (characterized by ptosis) have been discussed in the previous case (Ptosis).

## 6TH CNP

- other than 6th CNP (a lesion of the **peripheral** portion of the cranial nerve), lateral rectus (LR) weakness can be due to a 6th cranial **nucleus** lesion in the pons. The latter is suggested by a coexisting ipsilateral lower motor neuron (LMN) facial weakness (**the 7th CN winds around the 6th cranial nucleus!**) ± contralateral hemiparesis.




*the hemiparesis and facial weakness are on the same side of the body.

£nasopharyngeal carcinoma.

*Investigation of LR weakness*

- MRI / CT brain - focal lesions, hydrocephalus.
- cerebrospinal fluid study - chronic meningitis.
- blood glucose, otorhinolaryngological referral.

*VIP!*

**Raised ICP** is the most important cause of isolated 6th CNP

*What is false localizing sign?*

- neurological signs that reflect pathology distant from the expected anatomical locus.
- commonest examples - **6th CNP (unilateral or bilateral)** and **papilledema** secondary to **raised ICP** such as chronic meningitis and obstructive hydrocephalus (due to a tumor).
- the 6th CN is vulnerable to pressure effect because of its long intracranial course and stretching over the ridge of petrous part of temporal bone.

## CASE 3 PARKINSONISM ★★★

- a clinical syndrome characterized by tremor, rigidity and bradykinesia.

**Potential exam cases**

- Primary - **Parkinson's disease** (PD)
- Secondary parkinsonism - neuroleptics, Wilson's disease (WD), vascular (stroke)
- Parkinsonism-plus syndrome (PPS) - Progressive Supranuclear Palsy (PSP), Multiple System Atrophy (MSA)

*VIP!* Commonest cause of parkinsonism in exam - **PD**

### *Clinical diagnosis of PD*

- asymmetrical signs of parkinsonism
- no clinical evidence of PPS and secondary parkinsonism
- marked response to dopaminergic drugs

### *Treatment of PD*

- early stage - dopaminergic drugs (e.g. dopamine agonists).
- late stage - surgery (deep brain stimulation / DBS, pallidotomy).

### *Why should you differentiate PPS from PD?*

- response to dopaminergic drugs and brain surgery is poor in PPS (c.f. PD - good response).
- long-term outlook of PPS is poorer (due to more aggressive course).

### *Why do you need to recognize secondary parkinsonism?*

- some cases are treatable - WD (chelating agent), neuroleptic-induced parkinsonism (withdrawal of neuroleptic).

*Hello hello.....*

*A pessimist sees the difficulty in every opportunity...*

*but an optimist sees the opportunity in every difficulty*

- Sir Winston Churchill

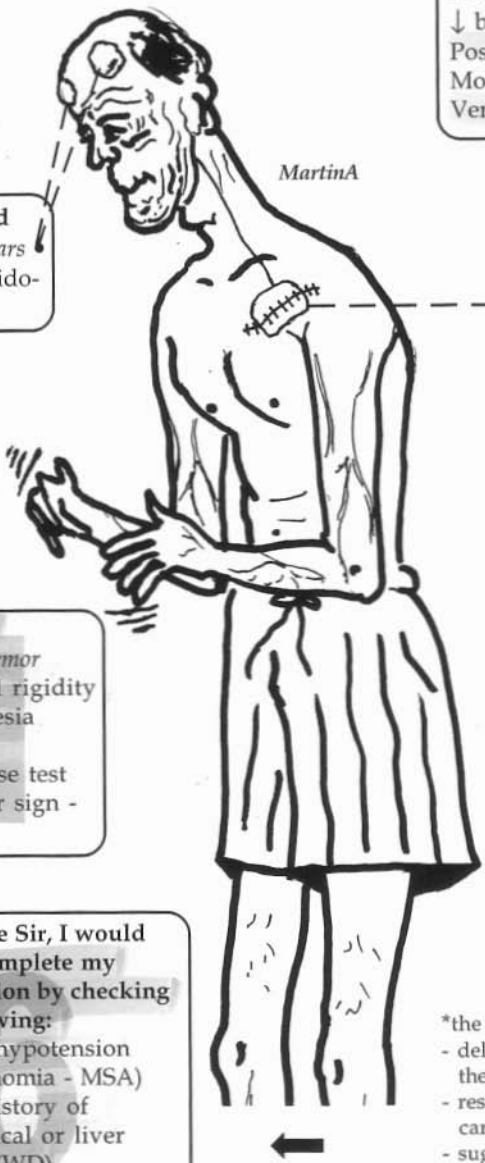
The greatest mistake in the treatment of diseases is that there are physicians for the body and physicians for the soul, although the two cannot be separated - Plato

# PARKINSONISM

*Look for etiology of parkinsonism!*

"This man has slowness of movement and recent brain surgery - examine him"

**Face / head**
*Mask-like facies*
↓ blinking of eyes
Positive glabellar tap
Monotonous speech
Vertical gaze palsy (PSP)




**Face / head**
*Surgical scars*
(DBS, pallidotomy)

**Chest**
*Implantable pulse generator* / IPG*
(DBS)

**Lower limb**
Upgoing plantar (pyramidal sign - MSA)

**Gait**
*Festinant*
*Stooped posture*
↓ arm swing
Shuffling gait
Turning "en bloc"
Gait ignition failure
Retropulsion

**Hand**
*Resting tremor*
Cogwheel rigidity
Bradykinesia
- writing
Finger-nose test (cerebellar sign - MSA)

**Excuse me Sir, I would like to complete my examination by checking the following:**
Postural hypotension (dysautonomia - MSA)
Family history of neurological or liver disorder (WD)
Neuroleptics

*the IPG:
- delivers electrical impulse to the basal ganglia
- resembles a permanent cardiac pacemaker
- suggestive of PD (the only indication for DBS at the moment).

## CASE REPORTS

Fig. 3.1

Fig. 3.2

**PATIENT 1** An elderly man with slowness of movement and left hand tremor for two years. **Findings**: "Mask-like" facies (Fig. 3.1), bradykinesia, resting ***tremor of left hand***, cogwheel rigidity and stooped posture (Fig. 3.2). No signs of PPS noted. ***Responded well to dopamine agonist.*** **Diagnosis**: *PD*.

**PATIENT 2** An elderly man with slowness of movement. **Findings**: ***Vertical gaze palsy*** (Fig. 3.3-6), bradykinesia, ***bilaterally symmetrical rigidity*** and no tremor. ***No response to dopaminergic drugs***. CT brain - normal. **Diagnosis**: *PSP*.

**Comments**: One has to be careful about interpreting gaze palsy - reduced upward gaze *per se* can be seen in some normal elderly people and PD patients.

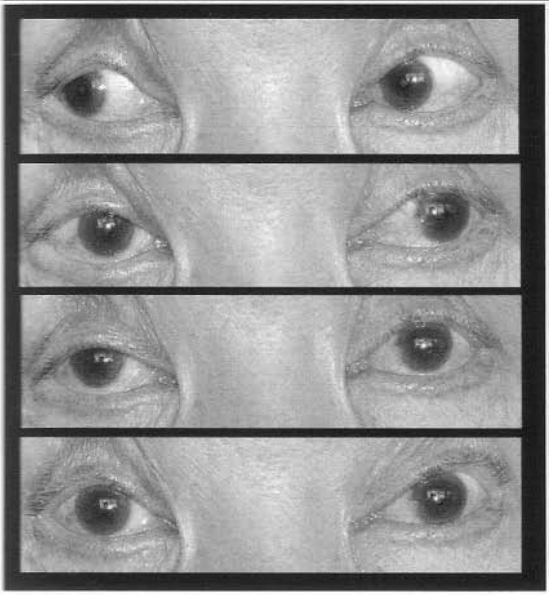


**Fig. 3.3** "Look towards the right".

**Fig. 3.4** "Look towards the left".

**Fig. 3.5** "Look upwards".

**Fig. 3.6** "Look downwards".

The faults of others is easily perceived, but that of oneself is difficult to perceive - Bhagavad Gita

# CASE 4 CEREBELLAR SYNDROME

*"I....am....per....pe..tual..ly... clum...sy....(staccato speech)"*


**Head**
Nystagmus
Scanning/ staccato speech
Titubation

**Trunk**
Truncal ataxia

**Lower Limbs**
Pendular knee jerk
Heel-shin test

**Upper limb**
Finger-nose test:
- past pointing (dysmetria)
- intentional tremor
Dysdiadochokinesia
Pronator drift
Rebound phenomenon
Hypotonia
Hyporeflexia

**Gait**
Broad base
Reeling to one side
Tandem gait
**Negative Romberg's sign**

## *Potential exam cases*

| Onset | Unilateral | Bilateral |
|---|---|---|
| Acute (hours – days) | **Cerebellar infarct / hemorrhage** | Encephalitis<br>Phenytoin toxicity |
| Subacute (days – weeks) | **Tumor*** (primary / secondary) | **Tumor*** (primary / secondary)<br>Alcohol<br>Paraneoplastic syndrome (bronchogenic carcinoma) |
| Chronic (months – years) | | **Spinocerebellar ataxia** (SCA)** |

*VIP!*

Commonest cerebellar disorders in exam - **stroke, tumor, SCA**

*whether the ataxia is unilateral or bilateral, it depends on the extent and site of the tumor.

**a group of autosomal dominantly inherited cerebellar degenerative disorders.

## CASE 5 UNILATERAL FACIAL WEAKNESS ★★

• **STEP 1** - determine the site of lesion.

a) decide whether it is upper motor neuron (UMN) or lower motor neuron (LMN) facial weakness:

> UMN facial weakness - **lower half** of face is weak
>
> LMN facial weakness - **whole half** of face is weak

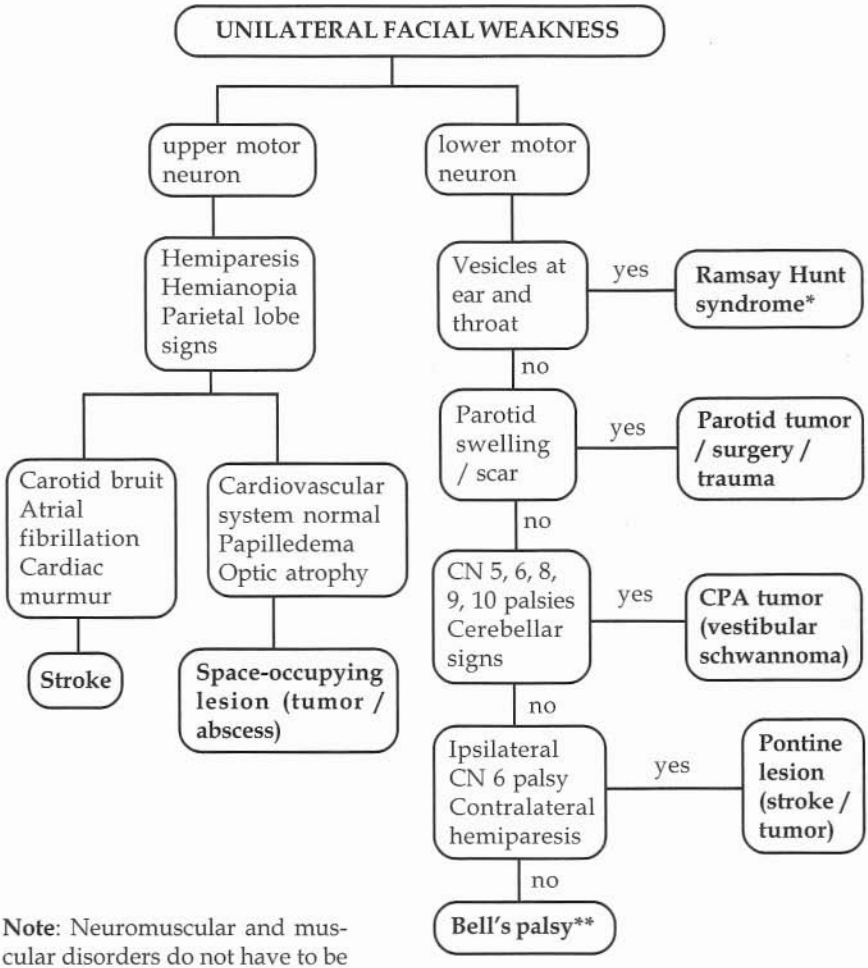
**Note**: The cells of the 7th cranial nucleus that innervate the upper half of face (frontalis and orbicularis oculi muscles) receive corticobulbar fibers that originate from **both sides of motor cortex**. Thus, a unilateral UMN lesion **above the 7th cranial nucleus** (e.g. at the motor cortex or internal capsule) will spare the upper face. In contrast, a LMN lesion at or below 7th cranial nucleus (e.g. 7th cranial nerve) causes weakness of both upper and lower halves of face.

b) look for associated neurological and physical signs to further pinpoint the exact site of the lesion.

• **STEP 2** - determine the etiology of the lesion.

| Site of lesion | Anatomical features | Relevant signs | Pathological process |
|---|---|---|---|
| Pons | **7th CN hooks around the 6th cranial nucleus before leaving the pons** | Ipsilateral 6th and 7th CN palsies Contralateral hemiparesis | Stroke / tumor / Multiple sclerosis |
| Cerebello -pontine angle (CPA) | 7th CN related to 5th, 6th, 8th CN and cerebellum 7th CN enters internal auditory meatus | Ipsilateral 5th, 6th, 7th, 8th CN palsies and ataxia | Tumor (**vestibular schwannoma**, meningioma) |
| Petrous part of temporal bone | 7th CN descends in facial canal and expands to form the geniculate ganglion Branches – greater petrosal nerve, nerve to stapedius | Vesicles at ear and palate Deafness | Fracture, otitis media, **Bell's palsy**, Ramsay Hunt syndrome |
| Parotid gland | 7th CN enters parotid gland and divides into temporal, zygomatic, buccal, mandibular and cervical branches | Parotid mass / scar | Parotid tumor / trauma / surgery |

# APPROACH TO UNILATERAL LOWER MOTOR NEURON FACIAL WEAKNESS




**Note**: Neuromuscular and muscular disorders do not have to be considered as they usually cause bilateral facial weakness.

*Ramsay Hunt syndrome:
**R**eactivated **H**erpes Zoster infection of the geniculate ganglion and **R**educed **H**earing. (*Uberoi RS*)
**commonest cause of unilateral LMN facial weakness in clinical practice - associated with herpes simplex virus.

*VIP!*

Commonest causes of unilateral LMN facial weakness in exam - **Bell's palsy and vestibular schwannoma**

# RIGHT LOWER MOTOR NEURON FACIAL WEAKNESS

"This man has facial asymmetry - examine him"


*VIP!* Don't forget to check the corneal reflex (vestibular schwannoma)

1. **USE** a torchlight to look for vesicles in the ear (Ramsay Hunt syndrome)

2. Parotid swelling / scar (parotid tumor / surgery / trauma)

3. Right 5th, 8th, 9th and 10th cranial nerve palsies (right cerebello-pontine angle tumor)

4. Right 6th cranial nerve palsy, left hemiplegia (right pontine lesion - stroke / tumor)

5. No abnormalities as mentioned from 1 to 4 → right Bell's palsy

NEUROLOGY UNILATERAL FACIAL WEAKNESS

## CASE REPORTS

**PATIENT 1** This man presented with right ear deafness and unsteadiness for three months. **Findings**: Absent right ***corneal reflex***, right sensorineural deafness, right LMN facial weakness (Fig. 5.1-3) and right-sided ataxia. CT / MRI brain (Fig. 5.4) - tumor mass at right cerebellopontine angle (CPA). **Diagnosis**: *Right vestibular schwannoma.*

**Comment**: Loss of corneal reflex is the earliest sign of vestibular schwannoma.

**Fig. 5.1** "Smile".

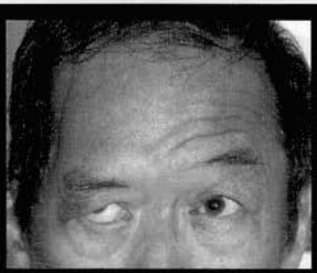


**Fig. 5.2** "Wrinkle your forehead".

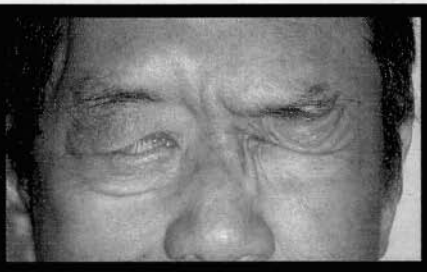


**Fig. 5.3** "Close your eyes as hard as possible".

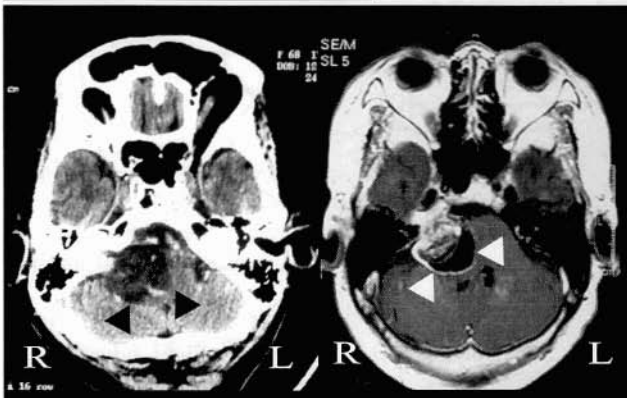



**Fig. 5.4** Right *vestibular schwannoma*. *Left*: CT scan - hypodense mass at CPA (black arrowheads) with mild contrast enhancement. *Right*: T1-weighted MRI - the same mass (white arrowheads) with rim enhancement.

**PATIENT 2** A lady with acute facial asymmetry and left ear deafness after viral fever. **Findings**: Left LMN facial weakness, ***vesicles*** at the left external ear (Fig. 5.5 - Section 2). **Diagnosis**: *Ramsay Hunt syndrome.* **Progress**: She improved after a course of Acyclovir and prednisolone.

• *remember* - dysphasia is a **language** dysfunction while dysarthria and dysphonia are not.

**Dysphasia / aphasia**

- impairment of the production and / or the comprehension of spoken or written words
- the content of speech is abnormal

**Dysarthria**

- defect in articulation of speech - slurring of speech
- the content of speech is normal

**Dysphonia**

- impairment in production of voice (soft or hoarse voice)
- the content of speech is normal

*If it **is dysarthria, try to determine the subtype:***

- Pseudobulbar dysarthria - "hot potato" speech.
- Bulbar dyarthria - nasal speech.
- Cerebellar dysarthria - scanning / staccato speech (syllable by syllable).
- Parkinsonian dysarthria - monotonous, soft speech.

Note: Local (non-neurological) causes of dysarthria such as dentures and oral malignancy are excluded from the present discussion.

*Children.....remember this!*

*If you try you may fail...*

*if you don't try you're guaranteed to fail*

- Jesse Jackson

# CASE 7 DYSPHASIA

- remember the five basic steps in the assessment of language function:

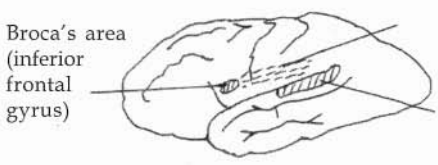
1. **Comprehension**: 3-steps instructions – "close your eyes, lift up your left hand and touch your left ear"
2. **Spontaneous speech**: ask about the family, occupation, etc.
3. **Naming objects**: pen, torchlight, key, etc.
4. **Repetition of sentence**: "I want to go to the market to buy fish"
5. **Writing**:
   - write about occupation in a full sentence - "I work as a teacher in a school in Petaling Jaya"
   - carry out a written instruction - "lift up your right hand and touch your nose"

## *Distinguishing the common types of dysphasia*

| Clinical features | Expressive (Broca's) dysphasia | Receptive (Wernicke's) dysphasia | Conductive dysphasia | Nominal dysphasia |
|---|---|---|---|---|
| Comprehension | Normal | Impaired | Normal | Normal |
| Spontaneous speech | Non-fluent*<br>Telegraphic | Fluent<br>Paraphasia<br>Neologism | Fluent<br>Paraphasia<br>Neologism | Pauses<br>Lack nouns |
| Naming objects | Impaired | Impaired | Impaired | Impaired |
| Repetition | Impaired | Impaired | Impaired | Normal |
| Writing | Impaired | Impaired | Impaired | Pauses<br>Lack nouns |
| Site of lesion | Left inferior frontal gyrus | Left superior temporal gyrus | Left arcuate fasciculus | Left temporal lobe |

*in severe cases of expressive dysphasia, patients become mute.

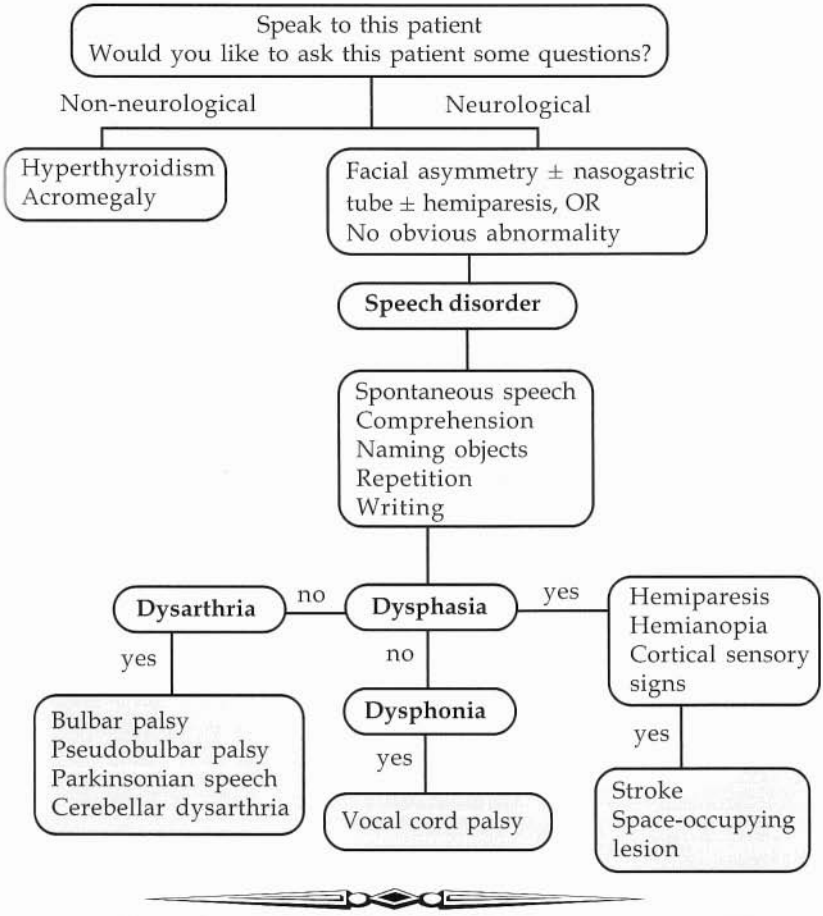
## *Neuroanatomical correlation*




*VIP!*

Commonest speech disorder in exam is **dysphasia (middle cerebral artery stroke, tumor)**

- Wernicke's area – responsible for the comprehension of language.
- Broca's area – responsible for the production of language.
- Arcuate fasciculus – links the Wernicke's area with Broca's area, and thus acting as a "communication system" between these two language centers.




## CASE REPORTS

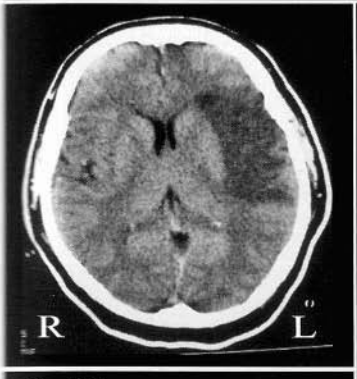



Fig. 7.1

**PATIENT 1** This hypertensive man had sudden onset of speech difficulty. **Findings**: He could obey two-step command. Naming objects and repetition were impaired. He was ***"quiet"*** and spoke only a few words. Describing his job, he said, ***"biochemist..... hospital...."***. He had right hemiparesis. **Investigations**: CT brain (Fig. 7.1) - recent left frontoparietal infarct. **Diagnosis**: *Expressive dysphasia - left middle cerebral artery stroke.*

When one door of happiness closes, another opens, often we look so long at the closed door that we do not see the one that has been opened for us - Helen Keller

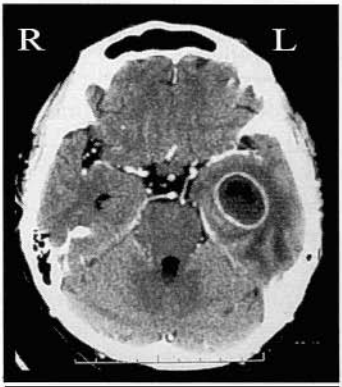



Fig. 7.2

**PATIENT 2** A man with headache and fever for two weeks. **Findings**: When asked to close his eyes, he opened his mouth. He was rather talkative but ***no one could understand him.*** Describing his job, he said ***"din-du-pa-taaa".*** While drinking coffee, he said, "it is ***bitter***, too much sugar". Naming objects and repetition were impaired. **Investigations**: CT brain (Fig. 7.2) - ring-enhancing lesion at left temporal lobe. **Diagnosis**: *Receptive dysphasia - left cerebral abscess.*

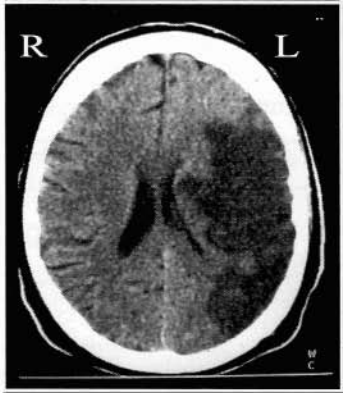



Fig. 7.3

**PATIENT 3** Diabetic man with acute right hemiplegia. **Findings**: He was ***mute*** and could only stare at the examiner when asked to carry out two-step command. Naming objects and repetition were impaired. **Investigation**: CT brain (Fig. 7.3) - recent left frontotemporoparietal infarct. **Diagnosis**: *Global dysphasia - massive left middle cerebral artery stroke.*

**Comments**:

♣ **PATIENT 1 (expressive dysphasia)** - he was "quiet" due to difficulty in finding words. The speech was sparse, consisting of mainly nouns and verbs, with unimportant words omitted - "telegraphic speech" (biochemist...hospital"). Despite this, he could be understood. He could also obey command. Thus, the understanding of the **meaning of words was retained.**

♣ **PATIENT 2 (receptive dysphasia) -** the speech consisted of ***paraphasia*** (wrong word substitution - sugar was "bitter" rather than sweet) and ***neologism*** (non-existent words - "din-du-pa-taaa"). He could not understand command. Thus, the understanding of the **meaning of words was lost**.

♣ **PATIENT 3 (global dysphasia) -** he had features of receptive and expressive dysphasia (he was mute), implying extensive damage of both the language areas.

**VIP!**

**BRO**ca's dysphasia - **BRO**KEN speech

**W**ernicke's dysphasia - **W**ordy speech

*(Tao L)*

## CASE 8 MYELOPATHY

★★★

*How do you know it is a myelopathy?*

a) *Pattern of weakness:*
- paraplegia (thoracic cord lesion), tetraplegia (cervical cord lesion).
- mono- / hemiparesis (Brown-Sequard syndrome / hemisection of the spinal cord).

b) *Reflex changes:*
- **lower motor neuron signs at the level of the cord lesion and upper motor neuron signs below the level of the cord lesion.** For example, a C5 cord lesion causes inversion of biceps jerk - absent biceps jerk (C5) plus brisk supinator jerk (C6).

c) *Sphincter dysfunction:*
- neurogenic bladder (look for urine catheter).

d) ***Sensory deficits***

a) complete transection of the spinal cord - all modalities of sensation are lost below the level of the lesion.

b) Brown-Sequard syndrome - contralateral loss of pain and temperature sensation, ipsilateral loss of proprioception (ipsilateral weakness as well).

c) dissociated sensory loss:
- loss of pain / temperature sensation with preservation of proprioception - syringomyelia, anterior spinal artery infarct.
- loss of proprioception with preservation of pain / temperature sensation - subacute combined degeneration, multiple sclerosis, tabes dorsalis.

**What are the potential exam cases?**

*Acute (several hours to days)*
- **Trauma**
- **Transverse myelitis**
- Spinal cord infarction / bleeding (AVM*)

*Subacute (days to weeks)*
- **Transverse myelitis**
- Spinal cord abscess / **tumor**

*Chronic (months to years)*
- **Spinal cord tumor** (months)
- Motor neuron disease (months)

*"???...hhmm....."*

*arteriovenous malformation.

Twenty years from now you will be more disappointed by the things you didn't do than by the ones you did do - Anonymous

**Note**: The causes of transverse myelitis are multiple sclerosis, viral infection and systemic lupus erythematosus.

## MULTIPLE SCLEROSIS (MS)

- despite being a rare disease in Malaysia, **MS is a favorite exam case!**
- demyelinating disorder of the central nervous system.
- onset: 20-40 years, male : female ratio = 1 : 1.5.
- episodes of focal disorder of the optic nerves (blindness), spinal cord (weakness, numbness) and brainstem (internuclear ophthalmoplegia, cerebellar ataxia).
- investigations:
  - cerebrospinal fluid study - ↑ protein, presence of oligoclonal band.
  - MRI brain / spinal cord (Fig. 8).
  - evoked potential studies (prolonged latency in cortical response to sensory stimulus).

♣ **Poser's criteria** for the diagnosis of MS:

- a history of 2 episodes of neurological deficits and objective clinical signs of lesions at **> one site** in the central nervous system
- in the presence of only one clinical sign, laboratory evidence (evoked potentials, MRI) of an additional lesion is required

- treatment - intravenous methylprednisolone (hastens recovery in acute relapse), beta-interferon (prevention of relapse).

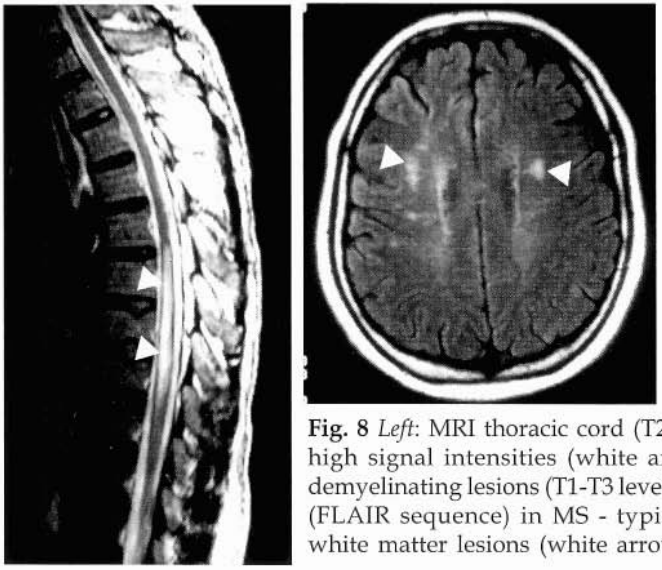


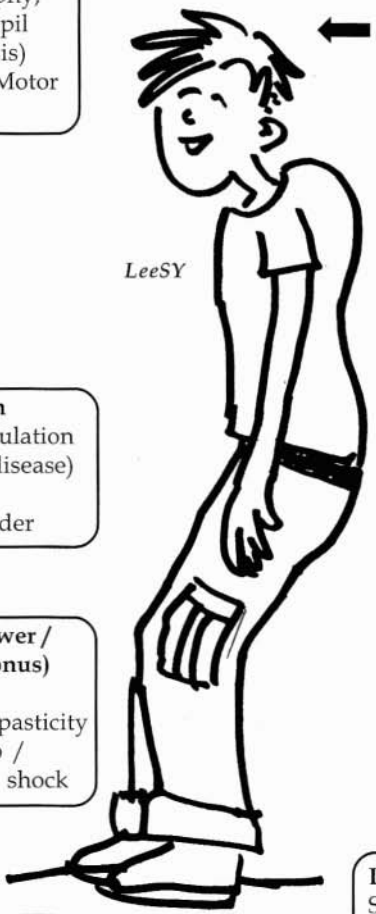
**Fig. 8** *Left*: MRI thoracic cord (T2 sequence) in MS - high signal intensities (white arrowheads) due to demyelinating lesions (T1-T3 levels). *Right*: MRI brain (FLAIR sequence) in MS - typical periventricular white matter lesions (white arrowheads).

# MYELOPATHY

"This man has weakness of legs - examine his lower limbs"

*VIP!* Common causes of myelopathy in exam - **trauma, transverse myelitis, tumor**

**Cranial nerves**
CN2 - optic atrophy, Marcus-Gunn pupil (Multiple sclerosis)
CN9, 10, 11, 12 (Motor neuron disease)




**Upper Limbs**
Inversion of biceps / supinator reflexes (cervical myelopathy)
Trophic ulcers, ↓ pain / temperature sensation (syringomyelia)

**Legs - Inspection**
Wasting / fasciculation (Motor neuron disease)
*Urine catheter* - neurogenic bladder

**Legs - Tone / Power / Reflex (ankle clonus)**
Hypertonia, hyperreflexia - spasticity
Hypotonia, hypo / areflexia - spinal shock

**Legs - Sensation**
Look for sensory level* at the **TRUNK** (if pain sensation is lost up to L1 level)

**Excuse me Sir, I would like to complete my examination by checking the:**
Spine - deformity / scar (trauma)
Anal tone / reflex

AND Steps 6-7

**Legs - Sensation**
Spinal sensory patterns: complete transection / hemisection / dissociated sensory loss

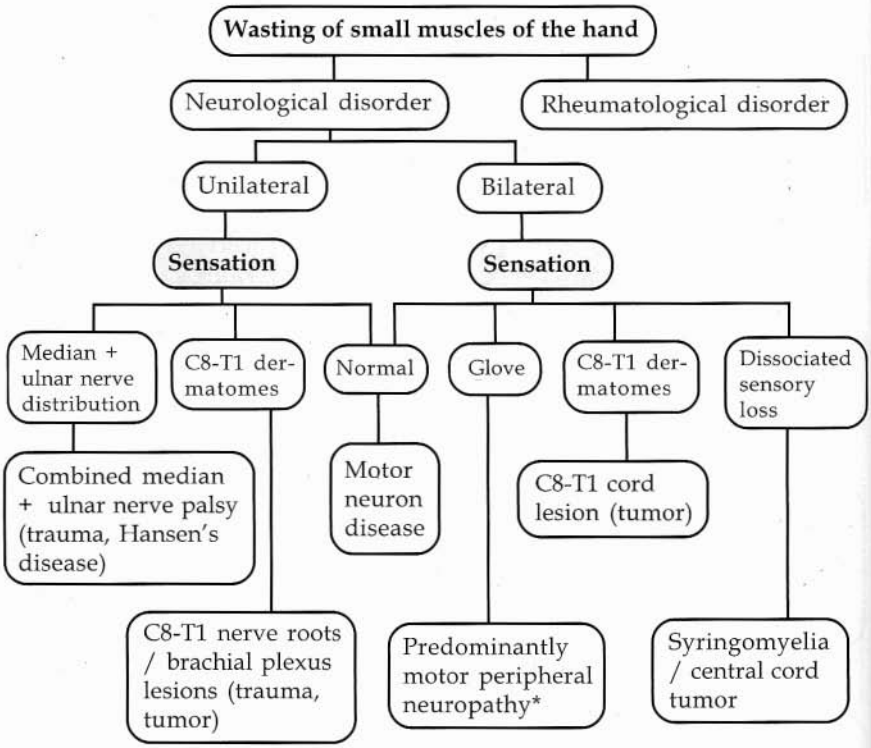
*Nipple - T4, subcostal margin - T8, umbilicus - T10, inguinal line - T12.



A natural death is where you die by yourself without a doctor's help - Anonymous

## CASE 9 WASTING OF SMALL MUSCLES OF THE HAND

• remember that **sensory** examination has the highest diagnostic yield.




*Charcot-Marie-Tooth disease (an autosomal dominantly inherited peripheral neuropathy) and Chronic Inflammatory Demyelinating Polyneuropathy.

### ♣ Points to consider

- neuromuscular and muscular disorders are not considered because the former does not cause muscle wasting while the latter does not usually cause distal muscle wasting
- Motor neuron disease (MND) usually starts with unilateral weakness and wasting of the distal muscles

*VIP!*

Wasting of small muscles of the hands - remember **MND** ⇒ LOOK for tongue fasciculation

## CASE REPORTS

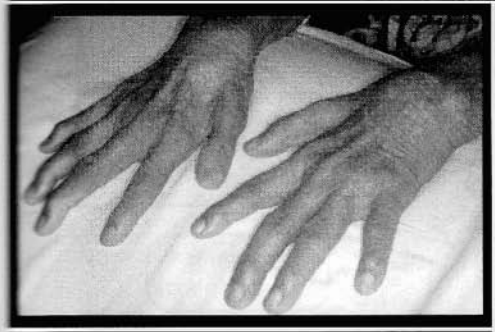


**Fig. 9.1** Wasting of small muscles of the hands resulting in guttering of the dorsum of the hands.

**PATIENT 1** 42-year-old man with progressive distal weakness for 12 years. Two out of five siblings are affected. **Findings**: Upper limbs - Fig. 9.1, generalized areflexia and ***"glove" pattern of anesthesia.*** Lower limbs - Fig. 9.2. Nerve conduction study - reduced conduction velocity. **Diagnosis**: *Charcot-Marie-Tooth disease (CMTD).*

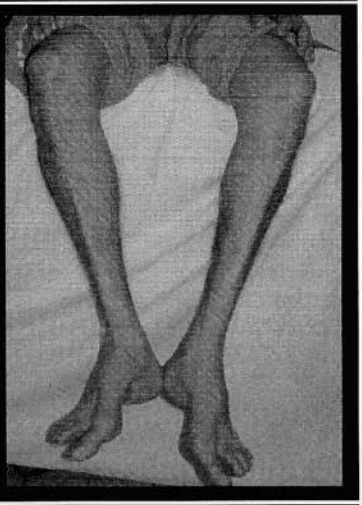


**Fig. 9.2** The "inverted champagne bottle" appearance (due to distal muscle wasting) and pes cavus (high-arched foot) are characteristic of CMTD.

**PATIENT 2** A man with progressive numbness of hands for one year. **Findings**: ***Trophic ulcers*** (Fig. 9.3 - Section 2), mild wasting and weakness of small muscles of the hands, areflexia, ***loss of pain sensation and preserved proprioception.*** **Investigation**: MRI cervical spine (Fig. 9.4). **Diagnosis**: *Syringomyelia.*

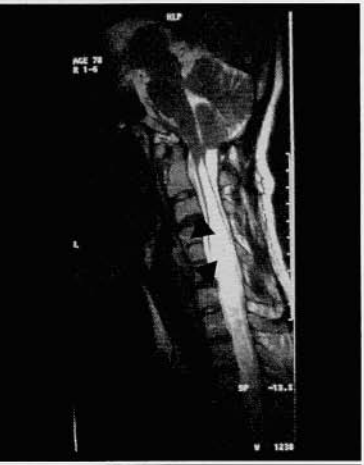


**Fig. 9.4** Syrinx (fluid-filled cavity in the central part of the cervical cord) appears as hyperintense signal (black arrow-heads) on MRI (T2-weighted sequence).

**PATIENT 3** An elderly man had progressive weakness of hands for eight months. **Findings**: Upper limbs - wasting and weakness of small muscles of the hands, ***fasciculation***, brisk reflexes and ***normal sensation.*** **Investigations**: MRI cervical spine - normal. Nerve conduction study - normal. **Diagnosis**: *Motor neuron disease (Amyotrophic lateral sclerosis).*

It is a mathematical fact that fifty percent of all doctors graduate in the bottom half of their class - Anonymous

## CASE 10 TREMOR

★★★

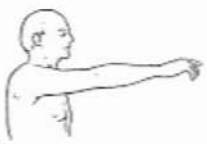
- rhythmic, oscillatory movement of a body part, usually the hands and legs.

*VIP!* A case of tremor in exam is **almost always Parkinson's Disease!**

**STEP 1**
Sit up with arms supported by arm-rest or pillows
Accentuate tremor by asking patient to count 100 backward

**Rest tremor -** Parkinsonism

**STEP 2**
Stretch out the arms with fingers separated



**Postural tremor -** Anxiety, drugs (beta-agonists), thyrotoxicosis alcoholism, Essential tremor

**STEP 3**
Finger-nose test

Tremor amplitude increases as finger reaches target
Dysmetria ⇒ **Intentional tremor -** cerebellar syndrome

Tremor amplitude remains the same throughout movement
No dysmetria ⇒ **Action tremor -** Essential tremor

*Is this Parkinson's Disease (PD) or Essential Tremor (ET)?*

| Clinical features | PD | ET |
|---|---|---|
| Frequency | 3-5 Hz | 4-8 Hz |
| Location | Hands, legs, jaw, tongue | Hands, head, vocal cord |
| Side involved | Unilateral or bilateral (asymmetrical) | Bilaterally symmetrical |
| Position | Resting | Postural / action |
| Associated signs | Cogwheel rigidity, bradykinesia | Cogwheel rigidity |
| Relieving factors | *Levodopa* | Beta-blockers, alcohol |

# CASE 11 PSEUDOBULBAR / BULBAR PALSY

| Clinical features | Pseudobulbar palsy | Bulbar palsy |
|---|---|---|
| Definition | Upper motor neuron paralysis of muscles innervated by 9th, 10th, 11th and 12th cranial nerves | Lower motor neuron paralysis of muscles innervated by 9th, 10th, 11th and 12th cranial nerves |
| Gag reflex | Brisk | Absent |
| Tongue | Small, spastic | Wasting and fasciculation* |
| Jaw jerk | Brisk | Normal |
| Speech | Spastic ("hot potato") | Nasal |
| Emotional lability | Present | Absent |
| Causes | Acute – stroke (commonest cause)<br>Chronic – Multiple sclerosis, Motor neuron disease | Acute – brain stem stroke, Guillain-Barre syndrome, Myasthenia gravis<br>Chronic – Motor neuron disease, Syringobulbia |

*Wasting and fasciculation of the tongue are seen in chronic, and not in acute disorders causing bulbar palsy (in which there is not enough time to develop muscle wasting).

*VIP!* Common cause of pseudobulbar / bulbar palsy in exam - **Motor neuron disease**

## CASE REPORT

This elderly man had progressive dysphagia and dysarthria for one year. **Findings**: ***Wasting and fasciculation of the tongue*** (Fig. 11), nasal speech, absent jaw jerk, ↓ palatal movement and absent gag reflex. The limbs and sensation were normal. MRI brain - normal. **Diagnosis**: *Motor Neuron Disease / MND (Progressive Bulbar Atrophy subtype).*

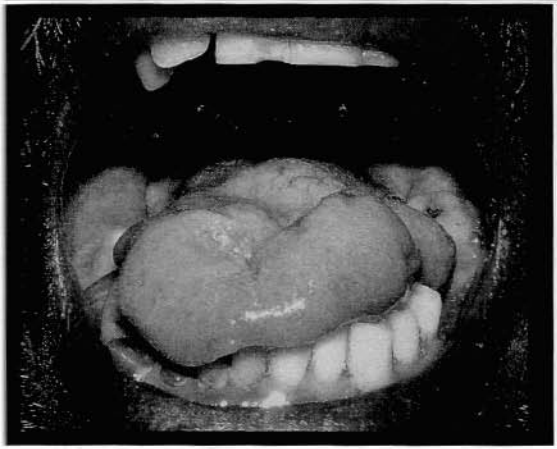


**Fig. 11** He could not protrude his tongue forward and to the sides. The severe wasting has led to fissuring of the tongue. Six months later, he developed weakness of the hands, consistent with the natural progression of MND.

Everyone is ignorant, only on different subjects - Will Rogers

## CASE 12 PROXIMAL MUSCLE WEAKNESS ★★

*Potential exam cases*

**a) Muscular dystrophies (MDs)**
- Duchenne MD / DMD (XLR)
- Becker MD / BMD (XLR)
- Facioscapulohumeral dystrophy / FSHD (AD)
- Limb-girdle MD / LGMD (AR)

**b) Inflammatory myopathies (IMs)**
- Polymyositis (PM), Dermatomyositis (DM)

c) Endocrine myopathies (EMs)
- Cushing's syndrome, thyrotoxicosis, acromegaly

XLR=X-linked recessive, AR=autosomal recessive, AD=autosomal dominant

♣ **Points to remember:**
- dystrophia myotonica is not considered because unlike other muscle disorders, it starts with distal muscle weakness.
- endocrine myopathies - as the myopathy is often overshadowed by the "endocrine facies", students are usually tested on the endocrine aspect.
- **non-muscular disorders** such as Myasthenia gravis (MG) and Guillain-Barre syndrome (GBS) can also present as proximal muscle weakness.
- metabolic myopathies are rare in exam because the muscle weakness generally resolves rapidly with treatment of the underlying disorders.

*Investigation of muscle disorders*
- serum CK / thyroxine, cortisol.
- EMG studies - myopathic pattern.
- muscle biopsy:

a) PM, DM - inflammatory cells.

b) MDs - segmental necrosis and regeneration, dystrophin protein staining (absent in DMD, ↓ in BMD).

- genetic study - dystrophin gene mutation in DMD and BMD.

*VIP!* Commonest causes of myopathy in exam - **muscular dystrophy and inflammatory myopathies**

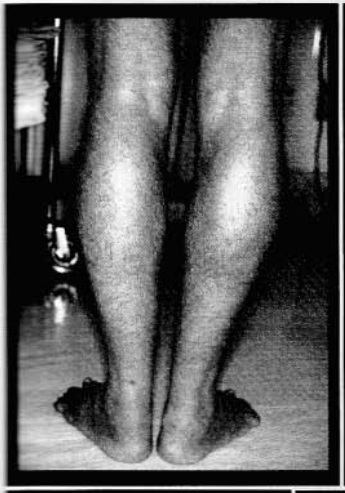
### EXAM SCENARIO

A 36-year-old man has proximal muscle weakness and normal reflexes / sensation. There are no other neurological and physical findings such as muscle wasting, pseudohypertrophy, facial rash and endocrine facies. No family history of muscle weakness. **What is your diagnosis?**

**Comments**: The diagnoses are **PM and** early stage of **MDs** (both often look similar clinically). The absence of family history does not exclude MDs (LGMD and BMD are recessively inherited). Pseudohypertrophy is not always present in MDs. Tell the examiner that muscle biopsy will solve the diagnostic problem.

## CASE REPORT

A 46-year-old man and his brother have progressive proximal muscle weakness for 20 years. **Findings**: ***Pseudohypertrophy of muscles*** (Fig. 12.1), ***Gower's sign*** (Fig. 12.2), ***waddling gait, normal reflexes*** and sensation. **Investigations**: Serum CK 4620 IU/l, EMG - myopathic pattern, muscle biopsy - ↓↓ dystrophin protein staining, segmental necrosis, regeneration. **Diagnosis**: *Becker MD*.



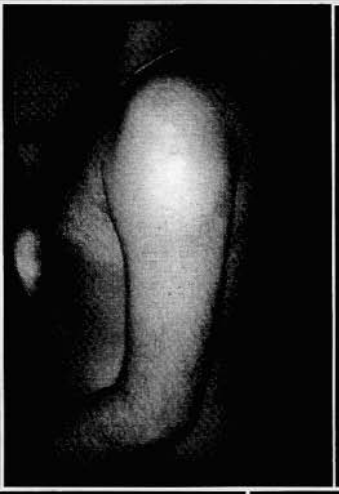


**Fig. 12.1** Pseudohypertrophy of gastrocnemius / soleus muscles *(left)* and deltoid muscles *(right)*.

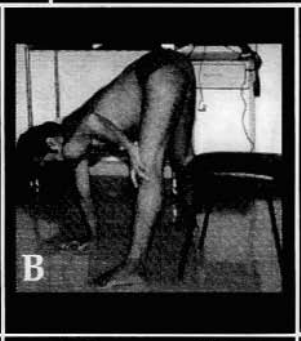
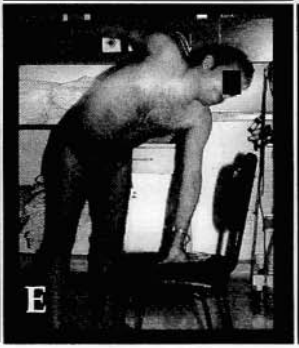
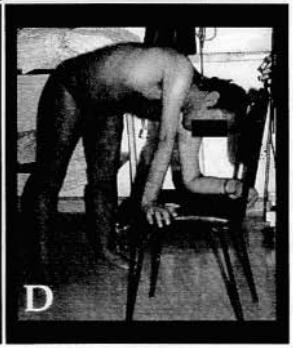





**Fig. 12.2 A to E: Gower's sign** (a sign of proximal myopathy). Standing up from sitting position: **A** and **B** = throwing himself forward, **C** = turning around, **D** = hands on the chair, and **E** = pushing himself up.

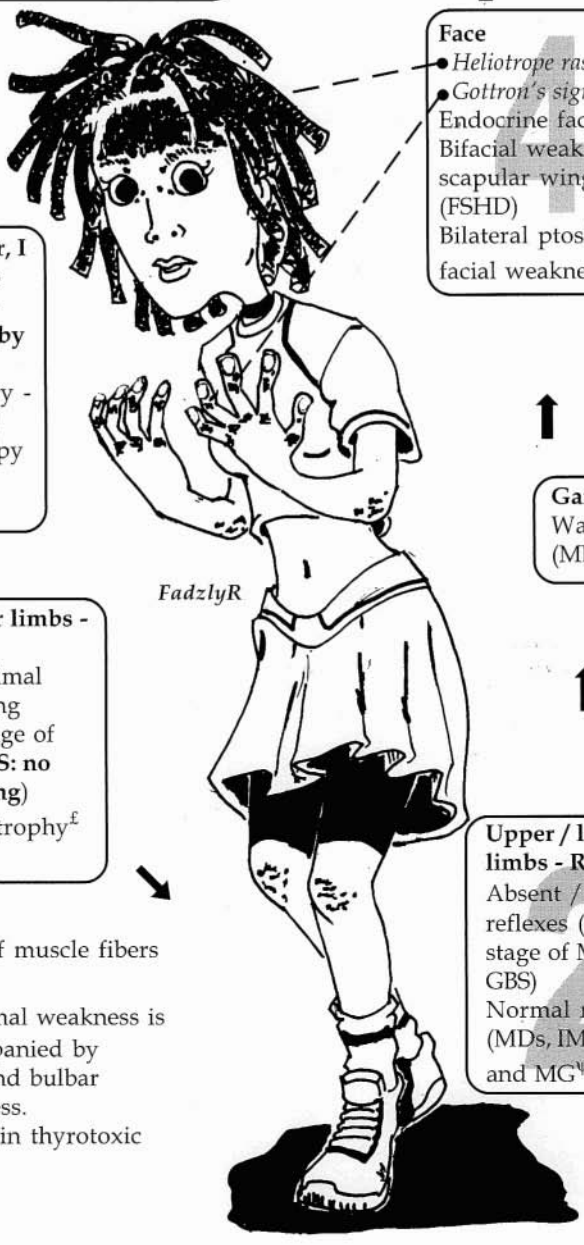



Don't waste your time on jealousy. Sometimes you're ahead, sometimes you're behind. The race is long, and in the end it's only with yourself - Mary Schmich

# PROXIMAL MUSCLE WEAKNESS

"This lady has difficulty climbing stairs / combing hairs - examine her upper / lower limbs"




**Face**
- *Heliotrope rash*
- *Gottron's sign* (DM)

Endocrine facies
Bifacial weakness + scapular winging (FSHD)
Bilateral ptosis + facial weakness (MG$^{\Psi}$)

**Gait**
Waddling (MDs)

**Upper / lower limbs - Reflexes**
Absent / ↓ reflexes (advanced stage of MDs, GBS)
Normal reflexes (MDs, IMs, EMs* and MG$^{\Psi}$)

**Upper / lower limbs - Inspection**
Marked proximal muscle wasting (advanced stage of MDs - c.f. **GBS: no muscle wasting**)
Pseudohypertrophy$^{£}$ (MDs)

**Excuse me Sir, I would like to complete my examination by asking for:**
Family history - MDs
Steroid therapy (Cushing's syndrome)

$^{£}$replacement of muscle fibers by fat.

$^{\Psi}$in MG, proximal weakness is usually accompanied by ocular, facial and bulbar muscle weakness.

*brisk reflexes in thyrotoxic myopathy.

# CASE 13 STROKE ★★

- a clinical syndrome characterized by acute onset of focal neurological deficit lasting > 24 hours due to cerebrovascular diseases.

*Two golden questions in stroke:*
- which **arterial territory** is affected?
- what is the **mechanism** of stroke?

*VIP!*  Cardiovascular examination is vital in stroke - **source of embolism**

*Determining the arterial territory*

| Arterial territory | Neurological signs / symptoms |
|---|---|
| Anterior cerebral artery | Contralateral weakness (leg > arm)<br>Urinary incontinence |
| Middle cerebral artery | Contralateral weakness of leg, arm and face<br>Dysphasia<br>Hemianopia<br>Parietal lobe signs (apraxia, agnosia) |
| Posterior cerebral artery | Hemianopia |
| Vertebro-basilar artery | Loss of consciousness<br>Uni- / bilateral numbness, weakness, ataxia<br>Dysphagia, dysarthria, diplopia<br>Vertigo, nystagmus |

*Some common etiologies of stroke*

*a) Cerebral infarction (ischemic stroke)*
- **atherosclerosis*** (large artery disease).
- **cardioembolism*** - left-sided thrombus, infective endocarditis, prosthetic valves.
- **lacunar infarction***.

*Lacunar syndromes*
- Pure motor (60%) - severe hemiplegia
- Pure sensory (5%)
- Sensorimotor (20%)
- Ataxic hemiparesis (15%) - mild weakness and ataxia on the same side of body

*b) Cerebral hemorrhage*
- **hypertensive*** - basal ganglia, pons, cerebellum.
- arteriovenous malformation.
- bleeding disorders (warfarin).

*commonest causes of stroke.

*Lacunar stroke*
- small vessel disease - lipohyalinosis of penetrating arterioles at the internal capsule and basal ganglia.
- clinical diagnosis is based on:

a) absence of cortical signs (hemianopia, dysphasia).
b) preserved conscious level.

Human action can be modified to some extent, but human nature can not be changed - Abraham Lincoln

c) characteristic neurological signs of lacunar infarction.

*What is the significance of carotid stenosis?*

- **predictor of ipsilateral stroke**: the risk increases with the degree of stenosis and presence of symptoms (transient ischemic attack / TIA or stroke).

*Fundoscopy in the evaluation of stroke*

- cholesterol emboli - carotid atheroma.
- calcific emboli - chronic rheumatic valvular disease.
- papilledema - suggestive of brain tumor (this sign is uncommon in stroke).

*Carotid bruit in TIA/stroke*

- best heard using the bell of the stethoscope.
- carotid bruit that is heard high up under the jaw originates from carotid bifurcation.
- bruit transmitted from the heart (**aortic stenosis**) becomes **softer** as the stethoscope is moved towards the angle of the jaw.

*MartinA*

*What is the significance of carotid bruit?*

- indicative of carotid stenosis (atheroma).
- not a specific and sensitive test for severe carotid stenosis (a severe stenosis may not cause a bruit at all).
- **a risk factor for ischemic stroke** and coronary events.

*Investigation of stroke*

- Full blood count (hematological disorders)
- ESR (arteritis)
- Blood glucose (to exclude hypoglycemia*)
- ECG (atrial fibrillation), chest Xray
- Echocardiography (source of embolism)
- CT scan brain (differentiates ischemic from hemorrhagic stroke, bleeding into a tumor*)
- MR Angiography, Carotid Doppler, Transcranial Doppler studies
- Thrombophilia, connective tissue screen - for patients with no obvious risk factors for stroke (e.g. young stroke - < 45 years)

*VIP!*

CT brain is the **only way** to differentiate cerebral infarct from hemorrhage with **absolute reliability**

*two important differential diagnoses of stroke.

*Specific treatment of acute ischemic stroke*

- antiplatelet agents (aspirin, clopidogrel).
- thrombolytic therapy (tissue plasminogen activator) - for patients who present within three hours of onset of symptoms.

## CASE REPORTS

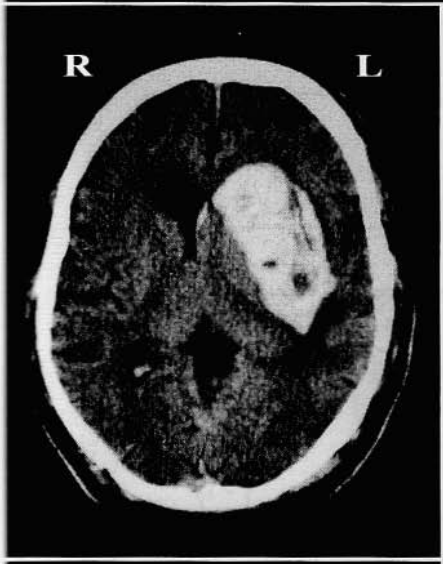



**Fig. 13.1** CT brain - left basal ganglia hematoma that was compressing the left frontoparietal regions (Broca's area).

**PATIENT 1** This hypertensive man had acute onset of ***headache, vomiting and loss of consciousness***. **Findings**: Upon recovery of consciousness, he was noted to have right hemiparesis and expressive dysphasia. **Investigation**: CT brain - Fig. 13.1. **Diagnosis**: *Stroke - hypertensive basal ganglia hemorrhage.*

**Comments**: This is a typical case of hypertensive hemorrhage, which usually occurs at the basal ganglia, pons and cerebellum. The presence of headache, vomiting and loss of consciousness is suggestive of intracerebral hemorrhage. However, it has to be emphasized that the **clinical differentiation between ischemic and hemorrhagic stroke is not consistently accurate.**

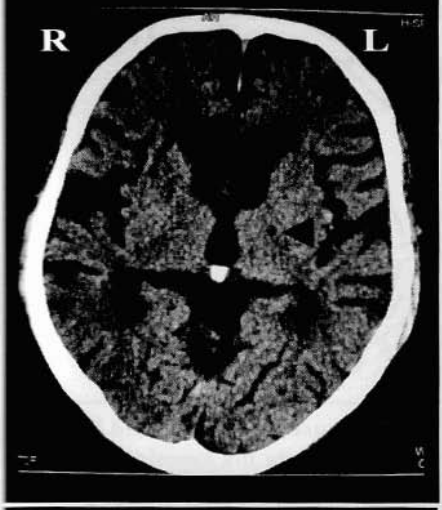



**Fig. 13.2** Repeated CT brain showed a hypodense area (< 15 mm in diameter) at the left internal capsule (black arrowhead).

**PATIENT 2** This man presented with acute right hemiplegia. **Findings**: ***Normal conscious*** level, right facial weakness and dysarthria. Power of right limbs - ***Grade 0/5. No cortical signs*** (dysphasia, hemianopia) and sensory loss. **Investigation**: Initial CT brain was normal. **Diagnosis**: *Stroke due to lacunar infarct at left internal capsule.* Two weeks later, another CT brain was done (Fig. 13.2).

**Comments**: This is a typical case of lacunar stroke affecting the posterior limb of the internal capsule, causing a severe hemiplegia without any cortical signs.

# STROKE

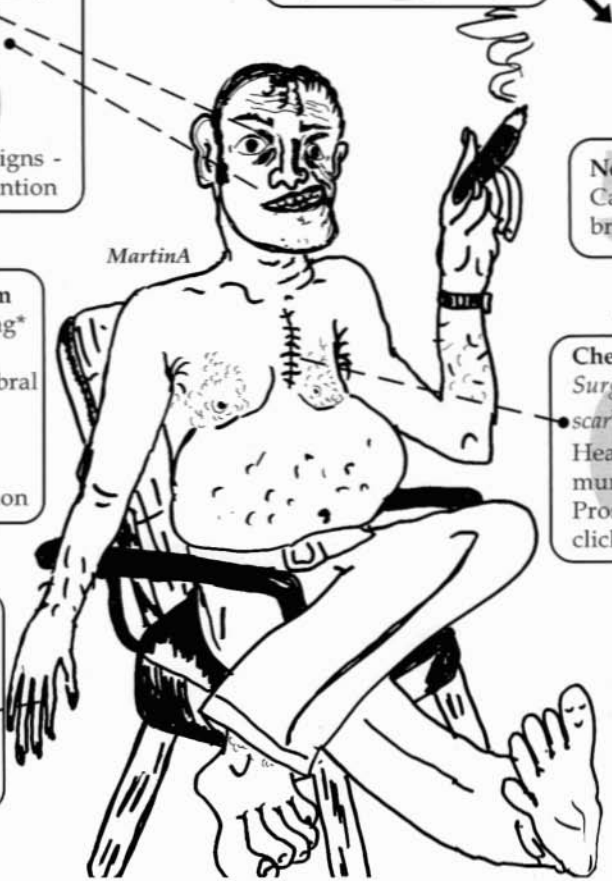
"This man had acute onset of right hemiparesis - examine him"

*Focus on central nervous and cardiovascular systems!*

**Eyes**
Polycythemia
Retinal emboli
Papilledema (tumor)

**Face / cranial nerves**
Malar rash (SLE**)
*Xanthelasmas*
*Facial weakness*
Dysphasia
Dysarthria
Hemianopia
Parietal lobe signs - sensory inattention

**Neck**
Carotid bruit




**Hand / foerarm**
Finger clubbing*
Vasculitis
Bruising (cerebral hemorrhage - warfarin)
Radial pulse - atrial fibrillation

**Chest**
*Surgical scar*£
Heart murmur
Prosthetic click

**General inspection**
Consciousness
*Hemiparetic limbs dangling at the side*

**Excuse me Sir, I would like to complete my examination by checking for:**
Fever (infective endocarditis, connective tissue disease)
History of TIA
Drugs - warfarin

*infective endocarditis, cyanotic congenital heart disease (paradoxical embolism).
**systemic lupus erythematosus.
£prosthetic valve (cardiac embolism) or bypass surgery (atheromatous disease).

# SECTION 1

# CHAPTER 2 – ENDOCRINOLOGY

## CASE 14 ACROMEGALY ★★

- the three main clinical features of acromegaly are:
  - ♦ **hormonal hypersecretion** by tumor cells - skeletal and soft-tissue overgrowth, diabetes mellitus, hypertension
  - ♦ **hypopituitarism***
  - ♦ **local pressure effects***:
    - bitemporal hemianopia / optic atrophy - chiasmal compression
    - 3rd, 4th and 6th cranial nerve palsies - extension into lateral wall of cavernous sinus

***compressive effects on surrounding structures** are prominent features in acromegaly because the pituitary tumor is usually a **macroadenoma** (> 10 mm in diameter) - everything is BIG in acromegaly! This is in contrast with Cushing's disease, which is usually caused by pituitary **microadenoma** (< 10 mm in diameter).

*Assessment of disease activity in acromegaly*

- Sweating excesively, Skin tags
- Increasing visual field defect and size of shoes / rings
- Glycemia, Goiter
- Hypertension, Headache

*"SIGH"*

*VIP!*

Acromegaly - **hormonal hypersecretion, hypopituitarism and local pressure effects**

*Diagnosis of acromegaly*

- ♦ clinical findings.
- ♦ lack of suppression of serum GH level with oral glucose tolerance test (OGTT).
- ♦ ↑ serum IGF-1 (insulin-like growth factor-1).

*Additional investigation of acromegaly*

- ♦ blood glucose.
- ♦ MRI brain.
- ♦ visual perimetry test.
- ♦ ECG, Echocardiogram.
- ♦ pituitary function / stimulation test

*Treatment of acromegaly*

- ♦ pituitary surgery (the treatment of choice):
  - the *earlier the surgery, the better is the chance for visual field recovery.*
- ♦ pituitary irradiation - when surgery is contraindicated.
- ♦ drugs (bromocriptine, octreotide) - adjunctive therapy.

## CASE REPORT

This 56-year-old man was recently told to be diabetic. **Findings** (Fig. 14.1 - Section 2, Fig. 14.2, Fig. 14.4-5): Coarse facial features, tall stature, ***bitemporal hemianopia*** and ↓ axillary / pubic hair. **Investigations**: OGTT - inadequate suppression of serum GH level. Serum T4, TSH, cortisol and ACTH levels - ↓. Serum prolactin level- ↑. MRI brain - Fig. 14.3. **Diagnosis**: *Acromegaly with hypopituitarism and visual field defect.*

**Fig. 14.2** He also has ***gigantism*** (height of seven feet two inches!), suggesting GH hypersecretion during pubertal growth.

**Fig. 14.4** Large, spade-shaped hand with gigantic rings - compare with the author's hand on the right.

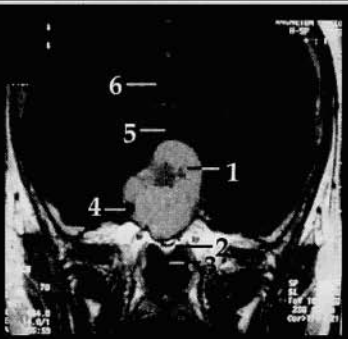
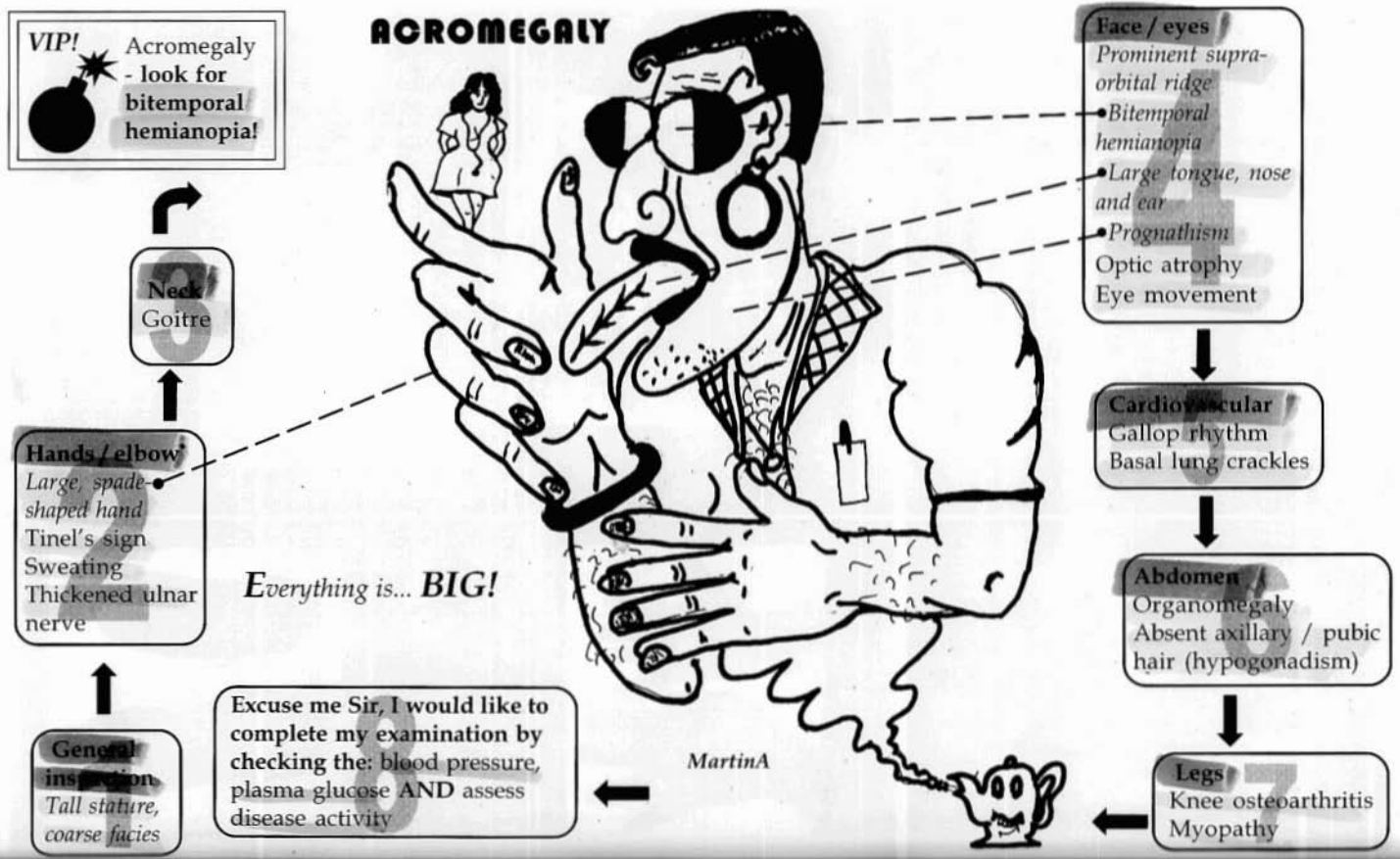



**Fig. 14.3** Coronal view of pituitary region on MRI brain (T1-weighted sequence with contrast).

1 - pituitary macroadenoma
2 - sphenoid sinus compressed by downward extension of pituitary macroadenoma
3 - nasopharynx
4 - internal carotid artery
5 - third ventricle compressed by suprasellar extension of pituitary macroadenoma
6 - lateral ventricle

**Fig. 14.5** He has to place a special order for his gigantic shoes! (the author's shoe is shown on the right).

Never go to a doctor whose office plants have died - Erma Bombeck


VIP! Acromegaly - look for bitemporal hemianopia!
ACROMEGALY
1 Face / eyes
Prominent supra-orbital ridge
Bitemporal hemianopia
Large tongue, nose and ear
Prognathism
Optic atrophy
Eye movement
2 Cardiovascular
Gallop rhythm
Basal lung crackles
3 Abdomen
Organomegaly
Absent axillary / pubic hair (hypogonadism)
4 Legs
Knee osteoarthritis
Myopathy
5 Excuse me Sir, I would like to complete my examination by checking the: blood pressure, plasma glucose AND assess disease activity
6 General inspection
Tall stature, coarse facies
7 Hands / elbow
Large, spade-shaped hand
Tinel's sign
Sweating
Thickened ulnar nerve
8 Neck
Goitre
Everything is... BIG!
MartinA

# CASE 15 THYROTOXICOSIS ★★★

## Causes of thyrotoxicosis

- Grave's disease* "GET A TSH"
- Exogenous hyperthyroidism (iatrogenic, iodine, factitious)
- Toxic multinodular goiter (MNG)*
- Adenoma*
- TSH-producing tumor (pituitary, hydatidiform mole / choriocarcinoma)
- Subacute (de Quervain's) thyroiditis
- Hashimoto's thyroiditis (early phase) (Donnelly TJ)

*99% of all cases of thyrotoxicosis.

**VIP!**

*"GET A TSH"*

Commonest causes of thyrotoxicosis - ***Grave's disease, MNG, adenoma***

## Grave's disease

- autoimmune disorder characterized by thyrotoxicosis, diffuse goiter with bruit, ophthalmopathy, thyroid acropachy (clubbing) and dermopathy (pretibial myxedema).

*Grave's ophthalmopathy/GO* (Fig. 15.1-2 - Section 2)

- chronic orbital inflammatory process seen in autoimmune thyroid disease.

## What is the mechanism of lid lag and lid retraction in GO?

- sympathetic stimulation → overactivity of ***Muller's muscle*** (the smooth muscle within the upper eyelid).
- lid lag and mild lid retraction (1-2 mm)* are due to thyrotoxicosis ***per se.***

*more marked lid retraction is due to GO.

*Signs of GO* "NO SPECS"

- No signs or symptoms
- Only signs of upper lid retraction and stare
- Soft tissue involvement
- Proptosis
- Extraocular muscle weakness
- Corneal involvement
- Sight loss - optic nerve compression (Werner SC)

## Cardiac manifestations of thyrotoxicosis

- high-output cardiac failure.
- atrial fibrillation.
- angina.
- thyrotoxic cardiomyopathy.

*Exophthalmos (also known as proptosis)* - forward bulging of the eye, as evident by viewing from behind and above the patient's head or appearance of the sclera below the inferior limbus.
*Lid retraction* - sclera seen above the superior limbus.
*Lid lag* - when looking downward, the movement of the upper eyelid lags behind the eyeball.

A hospital should also have a recovery room adjoining the cashier's office - Francis O'Walsh

*Confirming the diagnosis of thyrotoxicosis*

- serum T4, T3.
- serum TSH (the best screening test).

*Investigation of Grave's disease*

- TSH receptor antibody.
- CT / MRI orbit - for patients with unilateral proptosis, particularly euthyroid, to exclude retro-orbital tumor.

*Treatment of thyrotoxicosis*

*a) control symptoms* - beta-blockers

*b) restore euthyroidism*

i) Grave's disease:

- antithyroid drugs - high relapse rate (60%).
- radioactive iodine - effective, convenient.
- partial thyroidectomy - risk of anesthesia and trauma (recurrent laryngeal nerve palsy).

ii) Toxic MNG - radioiodine or partial thyroidectomy.

iii) Toxic adenoma - radioiodine or lobectomy.

*Disorders associated with Grave's disease*

- Addison's disease
- Type 1 diabetes mellitus
- Hashimoto's disease
- Pernicious anemia
- Myasthenia gravis
- Hypokalemic periodic paralysis
- Vitiligo

*VIP!* *90% of patients with GO are thyrotoxic while the rest have autoimmune hypothyroidism or are euthyroid*

## CASE REPORT

This thyrotoxic lady, who had previous thyroid surgery, complained of intermittent ptosis and diplopia. **Findings** (Fig. 15.3 - Section 2): Extensive vitiligo, left thyroid nodule, thyroidectomy scar, bilateral ptosis and ophthalmoplegia. **Investigations**: Positive Edrophonium test and TSH receptor antibody. **Diagnosis**: *Autoimmune polyendocrine syndrome / APES (Grave's disease, Myasthenia gravis, vitiligo).*

**Comments**: APES is characterized by presence of multiple autoimmune disorders in a particular patient. Inheritance plays a role in APES - this patient's daughter also has Grave's disease. Vitiligo is a marker of autoimmune disorders.

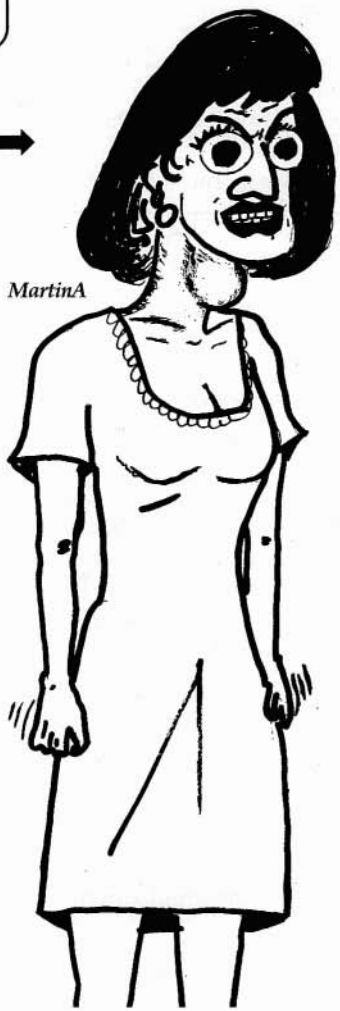
*When I am no longer in this world....*

*I want to be remembered as a true academician....*

*and* ***NOTHING ELSE.***

# THYROTOXICOSIS

"This patient has neck swelling and weight loss - examine her"




**1 Sit on a chair**
General inspection
*Underweight*
*Anxious*
*"Staring" look*
Vitiligo

**2 Neck**
Swallow a sip of water
*Inspect / palpate* goiter
Cervical lymph node
*Percussion* - retrosternal extension
*Auscultate* - bruit (Grave's disease)
Pemberton's sign*

**3 Hands**
Warm, sweaty palm
Tachycardia, atrial fibrillation
Fine tremor
Thyroid acropachy
Palmar erythema
Onycholysis

**4 Eyes**
*Exophthalmos*
*Lid retraction*
Ophthalmoplegia
Lid lag, chemosis
Visual acuity** (optic neuropathy)
Ptosis (associated Myasthenia gravis)

**5 Chest**
Gynecomastia
Gallop rhythm / basal lung crackles - cardiac failure

**6 Lower limbs**
Hyperreflexia
Pretibial myxedema#
Proximal myopathy

**Excuse me Sir, I would like to complete my examination by checking for the following:**
Symptoms of thyrotoxicosis (weight loss with good appetite, heat intolerance, *irritability*, etc)
Associated diabetes mellitus

*Retrosternal extension of goiter: ask patient to lift up both arms and flex the neck - look for facial congestion, dizziness and stridor.
**Severe GO may lead to optic nerve compression and blindness.
#Pink or reddish-brown lesions with *peau d'orange* appearance (subcutaneous deposition of mucopolysaccarides).

Even if you are on the right track, you'll still get run over if you just sit there - Will Rogers

# CASE 16 CUSHING'S SYNDROME (CS) ★★★

*What is CS?*

- clinical syndrome characterized by steroid excess due to any cause.

**Causes of CS**

- *ACTH-dependent* - Cushing's disease (CD)*, ectopic ACTH syndrome**
- *ACTH-independent* - iatrogenic, adrenal adenoma / carcinoma

*VIP!*

Commonest causes of CS in clinical practice: **iatrogenic**, followed by **CD**

*CS due to excessive secretion of ACTH by pituitary microadenoma (< 10 mm).

**small cell carcinoma of lung (commonest), bronchial carcinoids, pancreatic carcinoma.

***Three steps in the diagnostic approach to CS*** (refer to next page)

**a) Clinical diagnosis**

- based on a *constellation of new symptoms and signs* (weight gain, buffalo hump, purplish striae, proximal myopathy, etc).

**Note**: There are *no pathognomonic symptoms and signs of CS.*

*Confirming the clinical diagnosis of CS*

- ↑ serum cortisol (11 pm and 9 am) - loss of diurnal rhythm
- ↑ 24-hour urinary cortisol
- low-dose / overnight dexamethasone suppression test (DST)* - failure of suppression of serum cortisol

*a normal suppression excludes CS.

**b) Confirm the diagnosis of CS** - by demonstrating cortisol hypersecretion

**c) Determining the etiology of CS**

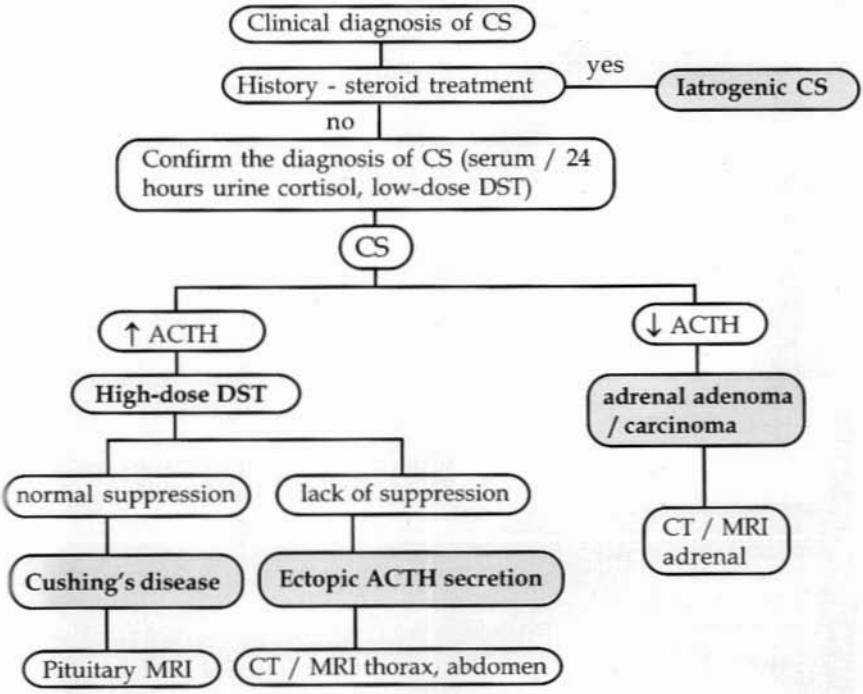
- high-dose DST
  - presence of suppression suggests CD while failure of suppression suggests either ectopic ACTH syndrome or adrenal tumor.
  - helps in ***differentiating CD from ectopic ACTH syndrome*** in cases of ↑ **serum ACTH**.
  - not necessary in cases of ↓ **serum ACTH** (adrenal tumor), in which the next investigation is CT / MRI adrenal gland.
- inferior petrosal sinus sampling (IPSS)* - another method of distinguishing CD from ectopic ACTH syndrome. IPSS is used when other investigations (biochemical and imaging) fail to determine the source of

*VIP!*

***The approach to CS: a) clinical diagnosis, b) biochemical diagnosis, and c) determining the source of cortisol***

*blood samples are withdrawn simultaneously from the inferior petrosal venous sinuses (which drain the pituitary gland) and a peripheral vein. A central to peripheral venous cortisol ratio of > 2:1 is diagnostic of CD.

## CLINICAL APPROACH TO CUSHING'S SYNDROME




**Note**: Only 50% of pituitary microadenoma are visible on MRI.

ACTH secretion.

***What is pseudo-CS?***

- non-endocrine disorders (depression, alcoholism) in which the presence of some clinical features (e.g. weight gain) and biochemical abnormalities (loss of diurnal rhythm, increased 24-hour urinary cortisol, false-positive low-dose DST) of CS leads to diagnostic confusion.
- these hormonal abnormalities resolve with alcohol abstinence or treatment of depression.

***VIP!***

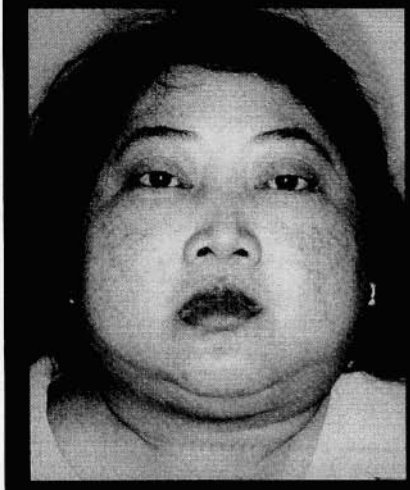
The most reliable signs that distinguish CS from pseudo-CS are skin atrophy, easy bruising and proximal myopathy

***Treatment of CS***

- Cushing's disease - transphenoidal microadenomectomy, pituitary irradiation, total bilateral adrenalectomy.
- ectopic ACTH secretion - surgical resection of tumor.
- adrenal adenoma / carcinoma - unilateral adrenalectomy.

Fortune knocks but once, misfortune has much more patience - Jonathan Swift

## CASE REPORTS



**PATIENT 1** A lady with young hypertension and weight gain. She was not on steroid / traditional medicine. **Findings** (Fig. 16.1-2, Fig. 16.3-4 - Section 2): "Orange on stick" appearance, atrophic skin and proximal weakness. **Investigations**: ↑↑ serum cortisol, ↓ **serum ACTH**, low-dose DST - lack of suppression. CT abdomen - Fig. 16.5. **Diagnosis**: *CS due to adrenal adenoma.* **Progress**: Following left adrenalectomy, all her Cushingoid features completely resolved.

**Fig. 16.1** The increase in facial fat results in the moon facies.

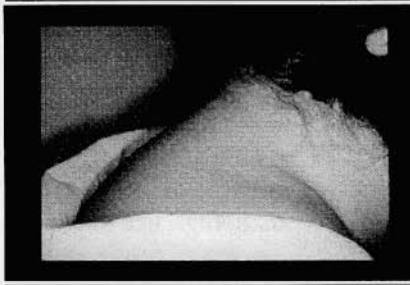


**Fig. 16.2** The enlarged dorsocervical fat pad (buffalo hump) is not as specific to CS as enlarged supraclavicular fat pad.

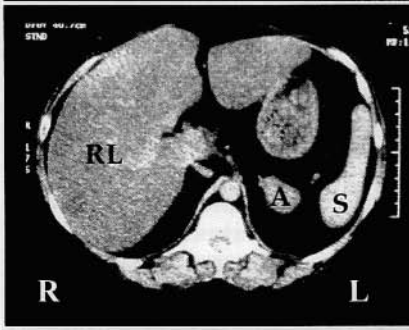



**Fig. 16.5** CT abdomen showing a well-defined left suprarenal mass (A) with no evidence of invasion of surrounding structures. RL = right lobe of liver, S = spleen.

**PATIENT 2** A 43-year-old lady was referred from the diabetic clinic with the clinical diagnosis of CS. **Investigations**: ↑↑ serum and 24-hour urine cortisol, ↑ **serum ACTH** and low-dose DST - inadequate suppression of serum cortisol. Subsequently, a **high-dose DST** revealed normal suppression of serum cortisol. MRI scan - ***pituitary microadenoma.*** CT thorax / abdomen - no evidence of tumor. **Diagnosis**: *Cushing's disease.*

# CUSHING'S SYNDROME

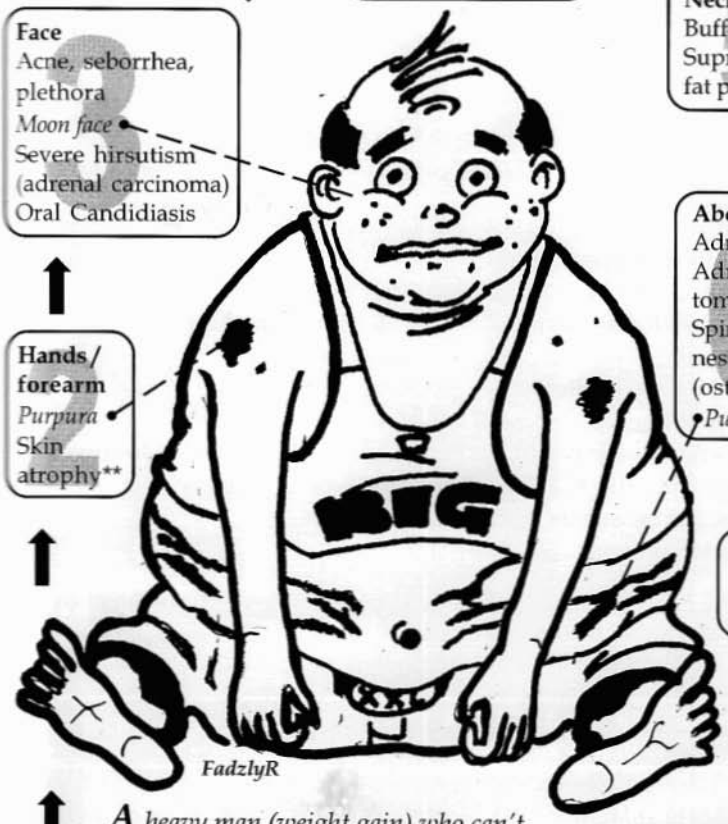
"This patient has weight gain - examine him"

*Look for etiology and complications of CS!*

**Eyes***
Cataract
Hypertensive / diabetic retinopathy

**Face**
Acne, seborrhea, plethora
*Moon face*
Severe hirsutism (adrenal carcinoma)
Oral Candidiasis

**Neck**
Buffalo hump
Supraclavicular fat pad




**Hands / forearm**
*Purpura*
Skin atrophy**

**Abdomen**
Adrenal mass
Adrenalectomy scar
Spinal tenderness (osteoporosis)
*Purplish striae*

**Legs**
*Proximal myopathy*

*A heavy man (weight gain) who can't stand up (proximal myopathy)!*

**General inspection**
*Central obesity ("orange on stick")*
Hyperpigmented (ectopic ACTH syndrome)
Rheumatoid arthritis / Myasthenia gravis (iatrogenic CS)

**Excuse me Sir, I would like to complete my examination by checking the following:**
Blood pressure
Plasma glucose
History - steroid therapy

*visual field examination is not necessary - CD is usually caused by pituitary microadenoma (c.f. acromegaly).

**elicited by gently pinching the skin on the dorsum of the hand - the skin is thin in CS but thick in obesity.

Whatever you do will be insignificant, but it is very important that you do it - Mahatma Gandhi

## CASE 17 MARFAN'S SYNDROME (MS)

- a dominantly inherited disorder of collagen synthesis that leads to abnormally fragile connective tissue.

### *Molecular basis of MS*

- genetic mutations in the fibrillin-1 (*FBN1*) gene on chromosome 15 which encodes the glycoprotein fibrillin, a protein that is important for the structural integrity of the lens, aorta and other connective tissues.


### *Clinical manifestations of MS*

- major systems affected - skeletal, cardiovascular and ocular.

*"MARFAN'S"*

- **M**itral valve prolapse, **M**yopia
- **A**rachnodactyly - *Walker* and Steinberg** signs*
- **R**elaxation of joints - hyperelasticity, **R**etinal detachment
- **F**amilial
- **A**ortic dilatation or dissection, **A**ortic regurgitation
- **N**ormal intelligence
- **S**keletal - pectus excavatum or carinatum, reduced upper-to-lower body segment ratio < 0.85 or arm span-to-height ratio > 1.05, **S**coliosis, **S**pontaneous pneumothorax, **S**ubluxation of lens

*(Shipman JJ)*

*positive if the distal phalanges of the first and fifth digits of one hand overlap when wrapped around the opposite wrist.
**positive if the thumb, when completely opposed within the clenched hand, projects beyond the ulnar border.

### *Management of MS*

- annual Echocardiography - to monitor aortic diameter and mitral valve function. Aortic dilatation and dissection are the major causes of morbidity and mortality. Prophylactic aortic surgery prolongs survival.
- ophthalmic referral.
- genetic counselling.

## CASE REPORT

A 24-year-old tall and thin man presented with acute severe **chest pain**. He had hypotension, profuse sweating and **unequal radial pulses**. There was no evidence of ***pneumothorax*** on the chest Xray. CT scan thorax showed ***dissection of the aorta***, extending from the ascending aorta to aortic arch.

# MARFAN'S SYNDROME

Fig. 17.1 Hyperelastic joint.

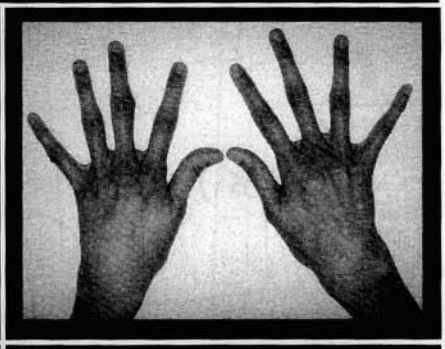


Fig. 17.2 Arachnodactyly.

Fig. 17.3 Positive Steinberg sign.

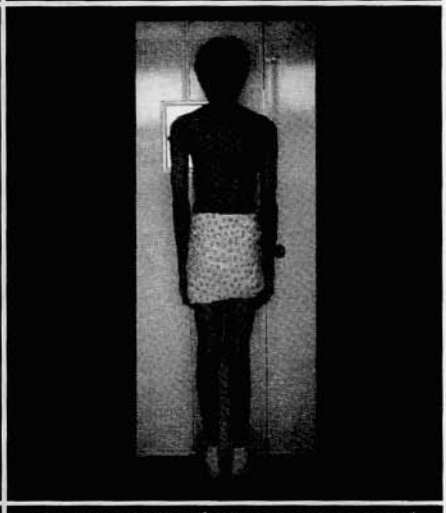


Fig. 17.4 Long, thin extremeties and tall stature (six feet).

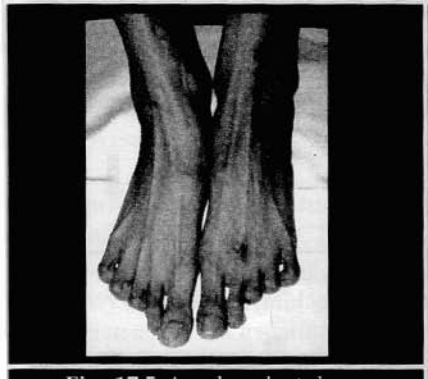


Fig. 17.5 Arachnodactyly.

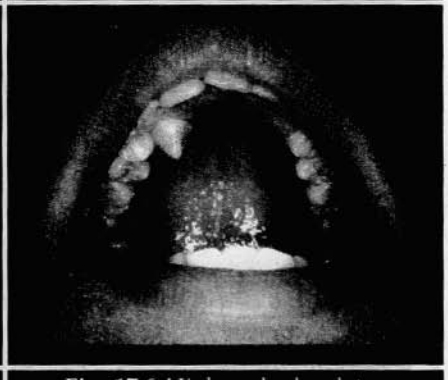
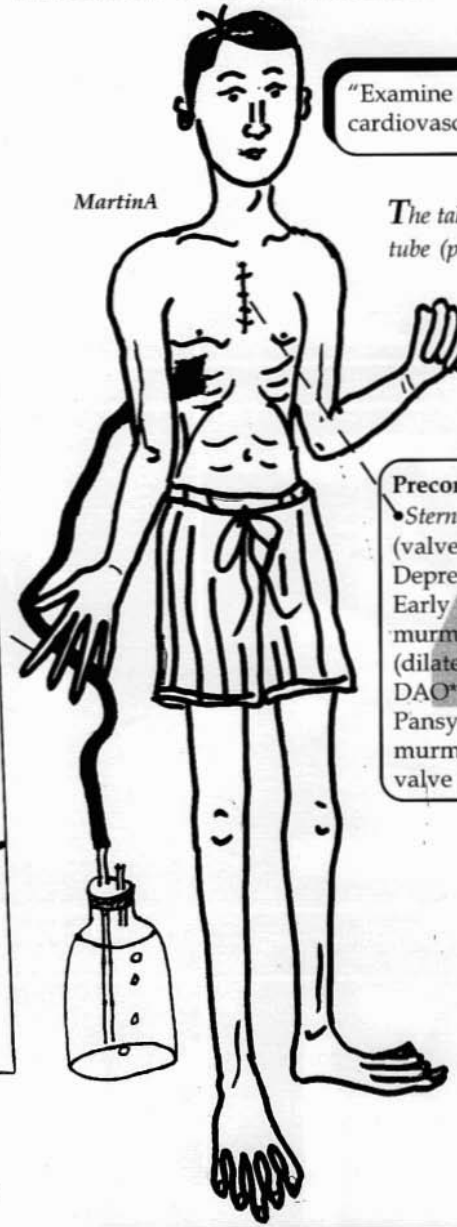


Fig. 17.6 High-arched palate.

The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires - William Arthur Ward

# MARFAN'S SYNDROME




**Face / eyes**
High-arched palate
Blue sclera
Lens subluxation

"Examine this patient's cardiovascular system"

*The tall man with chest tube (pneumothorax)*

*Steinberg sign*

**Hands**
*Arachnodactyly*
*Steinberg / Walker signs*
Joint hyperelasticity
Collapsing pulse (AR**)
Unequal radial pulse (DAO*)

**Precordium**
*Sternotomy scar* (valve replacement)
Depressed sternum
Early diastolic murmur - AR** (dilated aortic root, DAO*)
Pansystolic murmur (mitral valve prolapse)

**General inspection**
*Tall stature*
*Long, thin extremeties* compared with trunk

**Spine**
Scoliosis

*dissecting aneurysm of aorta.
**aortic regurgitation.
***upper segment - from the crown to the symphysis pubis, lower segment - from the symphysis pubis to the floor.

**Excuse me Sir, I would like to complete my examination by checking the:**
Arm span : height ratio > 1.05
Upper segment : lower segment ratio*** < 0.85
Family history

• the deficiencies of GH and gonadotrophins occur early, followed by TSH and ACTH, and ADH.

### *Some causes of hypopituitarism*

- **Tumor** - pituitary adenoma, craniopharyngioma
- **Iatrogenic** - pituitary surgery, irradiation
- Trauma
- Infection - encephalitis
- Infarction - Sheehan syndrome*

*post-partum pituitary necrosis due to severe hemorrhage.


Commonest causes of hypopituitarism **- pituitary tumor, iatrogenic**

### *Clinical manifestations of hypopituitarism*

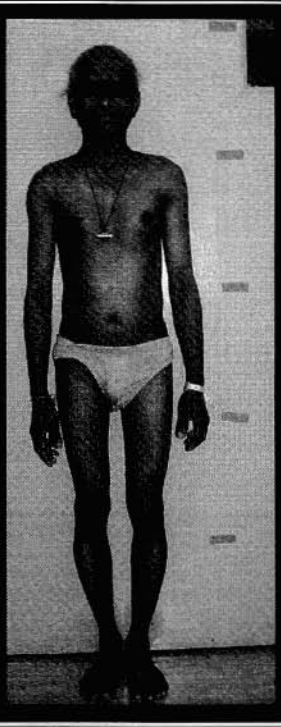
| Hormone deficiency | Symptoms | Signs |
|---|---|---|
| Gonadotrophins | Impotence / reduced libido<br>Irregular menses<br>Infertility | Sparse axillary / pubic hair<br>Decreased facial hair (males)<br>Small penis / clitoris / testes<br>High-pitched voice<br>Thin skin* |
| GH | Often no symptoms in adults<br>Occasionally hypoglycema | Short stature |
| ACTH | Non-specific (nausea, fatigue)<br>Hypoglycemia | Pallor (skin, areola)** |
| TSH | Cold intolerance, constipation<br>Fatigue | Bradycardia, hypothermia<br>Slow relaxation of ankle jerk |
| Prolactin | Failure of lactation | |
| ADH | Polyuria, thirst | |

*due to decrease in skin collagen.
**due to the melanocyte-stimulating effect of ACTH. In contrast, patients with primary adrenocortical hypofunction (adrenal diseases) are hyperpigmented due to excessive level of ACTH.

### *Investigation of hypopituitarism*

- Hormones: pituitary - ACTH, TSH, LH, FSH, GH, prolactin.
  target organs - cortisol, T4, estrogen, testosterone.
- Pituitary stimulation test: measurement of pituitary hormones after administration of Gn-RH, insulin (to induce hypoglycemia) and TRH.
- Neuroimaging: MRI pituitary.

## CASE REPORT



This 43-year-old Indian man complained of reduced libido and poor erection since his "teenage" years. At the age of ten years, he underwent surgery for "brain tumor". **Findings** (Fig. 18.1-2 and Fig. 18.3-6 - Section 2): ***Absent body hairs, soft and immature voice,*** pale and smooth skin, ***small testes***. **Investigations**: FSH, LH, testosterone, GH, ACTH and cortisol levels - ↓. TSH and T4 levels - normal. MRI brain - scarring at pituitary area. **Diagnosis**: *Iatrogenic hypopituitarism - due to pituitary surgery.*

**Comments:** The short stature suggested that GH deficiency had occurred before the pubertal growth.

**Fig. 18.1** Short stature (4 feet 10 inches): note the narrow shoulders and small muscles (feminine features).

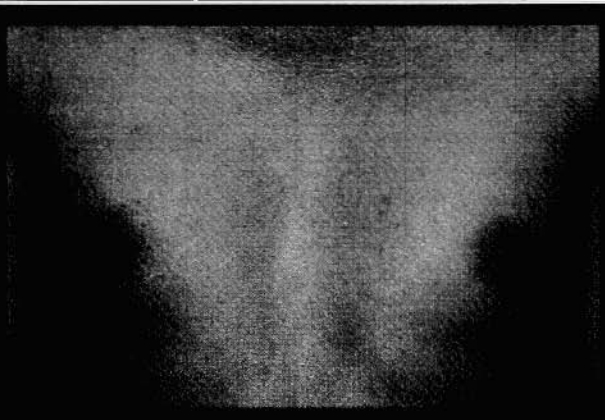


**Fig. 18.2** Gynecomastia and absent chest hairs (this is unusual for an ethnic Indian man!).

# HYPOPITUITARISM

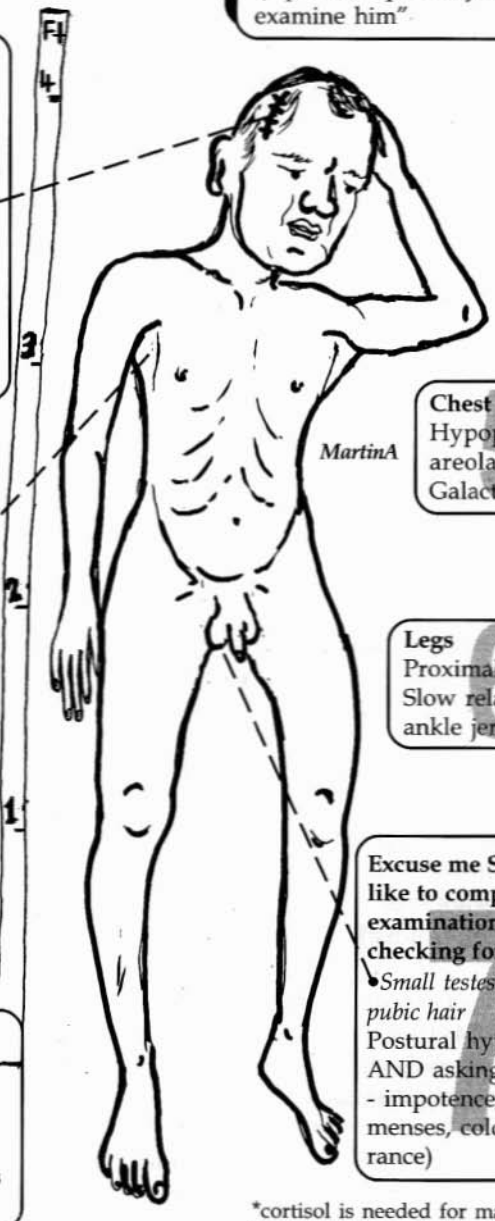
"This patient has loss of libido / previous pituitary surgery - examine him"

**4 Face**
*Absent facial hair*
Fine wrinkles around mouth and eyes (GH deficiency)
*Transfrontal hypophysectomy scar*
Eyes - optic atrophy, bitemporal hemianopia
High-pitched voice

**3 Axilla**
*Absent hair*

**2 Hands**
Bradycardia
Hypothermia

**1 General inspection**
Pallor
Smooth, thin skin
*Absent body hair*
*Short stature*
Eunuchoidal features (long limbs)




**5 Chest**
Hypopigmented areola
Galactorrhea

**6 Legs**
Proximal weakness
Slow relaxation of ankle jerk

**7 Excuse me Sir, I would like to complete my examination by checking for:**
*Small testes / absent pubic hair*
Postural hypotension* AND asking questions - impotence, irregular menses, cold intolerance)

*cortisol is needed for maintenance of blood pressure.

The men who try to do something and fail are infinitely better than those who try to do nothing and succeed - Lloyd Jones

## CASE 19 HYPOTHYROIDISM

*Causes of hypothyroidism*

- **D**estruction - surgery, radioiodine
- **D**rugs - thionamides, lithium
- **E**nzymes deficiency - dyshormonogenesis
- **A**utoimmune **T**hyroiditis (Hashimoto's)
- **H**ypothalamic-pituitary disorders (tumor)

*VIP!*

*"DEATH"*

Commonest cause of hypothyroidism - **autoimmune thyroiditis**

*Neurological manifestations of hypothyroidism*

- carpal tunnel syndrome.
- myopathy.
- pseudodementia.
- cerebellar syndrome.
- slow relaxation of ankle jerk.
- myxedema coma.

*Cardiovascular manifestations of hypothyroidism*

- sinus bradycardia.
- pericarditis / pericardial effusion.
- low-output cardiac failure.
- hypercholesterolemia / coronary artery disease.
- aggravation of angina.

*Causes of anemia in hypothyroidism*

- *microcytic* - iron deficiency due to menorrhagia.
- *macrocytosis* - associated pernicious anemia.
- *normocytic, normochromic* - directly due to thyroxine deficiency (thyroxine potentiates the effect of erythropoietin).

*Some autoimmune disorders associated with hypothyroidism*

- Diabetes mellitus.
- Pernicious anemia.
- Hypoparathyroidism.
- Addison's disease.
- Myasthenia gravis.
- Rheumatoid arthritis.

*Investigation of hypothyroidism*

- serum T3, T4, TSH.
- thyroid autoantibodies (anti-microsomal Ab, anti-thyroglobulin Ab) - autoimmune thyroiditis.

*What is the danger of thyroxine replacement in the elderly?*

- thyroxine can aggravate angina - start with half the usual dose!

# HYPOTHYROIDISM

"This patient has weight gain and cold intolerance - examine her"

*It's the total eclipse of the heart.....*

**Face / head**
*Alopecia, coarse hair*
*Loss of outer third of eyebrows*
*Periorbital puffiness*
Xanthelasma
Hoarseness of voice
Deafness
Macroglossia

**Neck**
Thyroidectomy scar
Goiter

**Chest**
Soft heart sound
Pericardial rub
Basal lung dullness (pleural effusion)

**Hands**
Puffy
Bradycardia
Dry, cold skin
Tinel's sign (carpal tunnel syndrome)

**Legs**
Proximal weakness
Slow relaxation of ankle jerk*

**General inspection**
*Lethargic, "dull" look*
Slowness of movement
Carotenemia
Vitiligo (autoimmune disorders)
Anemia

**Excuse me Sir, I would like to complete my examination by checking the following:**
Cerebellar gait
Other symptoms of hypothyroidism (constipation, depression, menorrhagia, etc)

*FadzlyR*

*ask patient to kneel on a chair with feet dangling over the edge.

ENDOCRINOLOGY HYPOTHYROIDISM

It is not sufficient to be worthy of respect in order to be respected - Alfred Nobel

# SECTION 1

# CHAPTER 3 – DERMATOLOGY

## CASE 20 ERYTHEMA MULTIFORME, STEVENS-JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS

- Erythema Multiforme (EM), SJS and Toxic Epidermal Necrolysis (TEN) form a spectrum of skin diseases which have common etiologies and similar histopathological findings.



### *Etiologies of EM, SJS and TEN*

- Drugs:
  - antibiotics (sulphonamide).
  - antiepileptics (sodium valproate, carbamazepine).
- Infection - *Herpes simplex, M. pneumoniae,* Streptococcal.
- Malignancy - lymphoma.
- Idiopathic.

**Note**: SJS / TEN are **essentially drug-induced.**

**EM**
- **target (iris) lesions** (hands, feet)
- no mucous membrane involvement
- self-limiting condition

**SJS** (Fig. 20.1-2 - Section 2)
- mucous membrane (eyes, oral cavity, external genitalia) affected
- systemic symptoms
- skin detachment < 10%
- mortality; 5-15%

**TEN**
- erosions of mucous membranes
- extensive skin detachment (> 30%)
- severe systemic symptoms
- mortality; 30-40%

### *Complications of SJS/TEN*

- eye - corneal ulcer, uveitis, panophthalmitis.
- genitourinary - renal failure, penile / vaginal scarring.
- respiratory failure (tracheobronchial shedding).
- skin - superimposed infection.

### *Investigation of EM, SJS and TEN*

- culture - urine, skin lesions and blood.
- serology - Mycoplasma, Streptococcal, herpes simplex.
- chest Xray - pneumonia.

*VIPs!*

- **target lesions** are characteristic of EM
- **drug history is vital** - antibiotics, antiepileptics

### *Treatment of EM, SJS and TEN*

- **withdraw the offending drugs!**
- topical steroid / antibiotic, artificial tears, burn unit.
- systemic steroid - controversial.
- acyclovir for herpes simplex infection.

## CASE 21 PEMPHIGUS / PEMPHIGOID



- the distinguishing features of the three main blistering disorders are summarized below (refer to Fig. 20.1-2 and 21.1-3 in Section 2):

| | Pemphigus | Pemphigoid | Erythema multiforme |
|---|---|---|---|
| **Site** | **Mucous membranes** Recurrent oral ulcers Trunk | Upper arms, thighs Mucous membrane – rarely involved | Hands and feet Mucous membranes** |
| **Characteristic feature** | **Fragile blisters** (rarely intact) → **raw areas** and shallow erosions **Nikolsky's sign*** | **Tense blisters** on eczematous base | **Target lesions** |
| **Histology** | Intraepidermal blister | Subepidermal blister | Subepidermal blister |
| **Immunology** | Direct fluorescence – epidermal staining of intercellular cement with IgG, C3 Circulating antibodies to intercellular cement | Direct fluorescence – linear IgG and / or C3 at dermo-epidermal junction Circulating antibodies to basement membrane | Negative |
| **Treatment** | Responds to high dose of steroid (120-240 mg daily) | Responds to lower dose of steroid (40 mg daily) | Withdrawal of offending agent Severe cases – steroid |

*the epidermis at the edge of the blisters is easily dislodged by sliding pressure. This sign is also seen in porphyria and Staphylococcal scalded skin syndrome.
**seen in Stevens-Johnson syndrome.

*VIP!*

Pemphigus presents as **raw skin areas** because the **fragile blisters easily rupture**

*My dear.....*

*the first thing you should do in medical school is to learn to love your patients.....*

*if you can't do this.....,*

***it means you haven't found your destiny.***

If you try you may fail, if you don't try you're guaranteed to fail - Jesse Jackson

## CASE 22 NEUROFIBROMATOSIS (NF)

- the features of NF-1 (Peripheral NF, Von Recklinghausen's disease) and NF-2 (Central NF) are summarized below:

| Features | NF-1 | NF-2 |
|---|---|---|
| Gene | Chromosome 17 | Chromosome 22 |
| Gene product | Neurofibromin* | Merlin (or schwannomin)* |
| Neurofibromas | Common | Rare |
| 6 or > café-au-lait patches | Common | Rare |
| Lisch nodules | Common | Rare |
| Commonest intracranial tumor | Optic gliomas (usually unilateral) | Vestibular schwannomas (usually bilateral) |

*tumor suppressor proteins.

### Diagnosis of NF-1

Requires the presence of 2 or > of:
- 6 or > of **cafe-au-lait spots** (> 15 mm in post-pubertal individuals)
- 2 or > **neurofibromas** or one plexiform neurofibroma
- axillary or groin **freckling**
- optic glioma
- 2 or > Lisch nodules
- sphenoid dysplasia / thinning of long bone
- a first-degree relative with NF-1

*Neurofibromas*: found in the skin and intracranial or intraspinal regions. Histologically, they composed of proliferation of all elements of peripheral nerve such as nerve trunks, Schwann cells and fibroblasts.
*Cafe-au-lait spots*: dark brown macules (increased melanin content).
*Freckling:* small cafe-au-lait spots.
*Plexiform neurofibroma:* noncircumscribed and diffuse growth which may be locally invasive and unresectable, causing disfigurement of the face and limb.
*Lisch nodules*: pigmented hamartomas that appear as dome-shaped structures on the surface of the iris.

### Diagnosis of NF-2 ("MISME-2" syndrome)

Requires the presence of:
- **bilateral vestibular schwannomas** OR
- a first-degree relative with NF-2 plus:
  - unilateral vestibular schwannoma OR
  - any two of the following - meningioma, glioma, schwannoma, juvenile posterior subcapsular lenticular opacity

*VIP!*

**"MISME-2"**
**M**ultiple **I**nherited
**S**chwannomas
**M**eningioma
**E**pendymoma
Type **2**

### *Complications of NF-1*

- disfigurement - due to neurofibromas (especially the plexiform type).

- cardiovascular - hypertension, renal artery stenosis.
- endocrine - pheochromocytoma.
- neurological - optic nerve glioma*, cerebral glioma, meningioma, mental subnormality.
- skeletal - kyphoscoliosis, pectus excavatum, pseudoarthrosis**, short stature and bowing of long bone (Fig. 22.1).
- lungs - interstitial pulmonary fibrosis.
- malignant change of neurofibromas.

*commonest intracranial tumor associated with NF-1.
**a non-healing pathological fracture.

*Diagnosis of NF:* ***VIP!***
**C**afe-au-lait spots
**A**xillary freckling
**F**ibroma
**E**ye - Lisch nodules
**S**keletal (bowing of bone, dysplasia)
**P**edigree (family history)
**O**ptic **T**umor (glioma)

**"CAFE SPOT"**

*(Zhao HQ)*

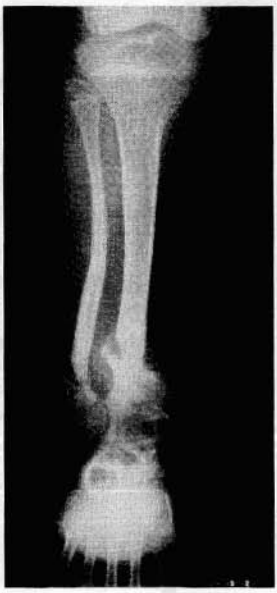


**Fig. 22.1** Xray of right tibia - bowing of the fibula and pseudoarthrosis of lower third of tibia / fibula.

## CASE REPORT

This man has paresthesia at the left side of the neck. His mother had "skin disease" and died after a surgery for brain tumor. **Findings** (Fig. 22.2-4 - Section 2): *Neurofibromas, giant plexiform neurofibroma, axillary freckling, cafe-au-lait spots and Lisch nodules.* **MRI cervical cord** - Fig. 22.5. **Diagnosis**: *NF-1 with bilateral paraspinal neurofibromas (C3-C4 level).*

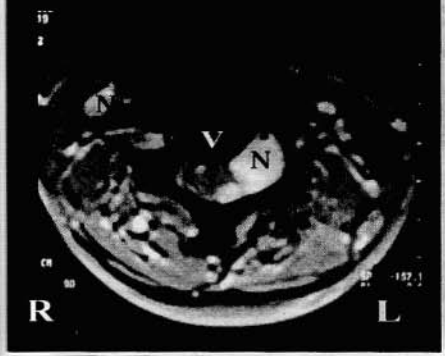



**Fig. 22.5** Axial MRI (T1-weighted sequence with contrast) of C4 cervical cord (S): bilateral paraspinal neurofibromas (N) with contrast enhancement. V = vertebral body.

The paraspinal neurofibromas can be seen at any level of the cord, and may give rise to the classical "dumbbell" appearance.

The greatest personal limitation is to be found not in the things you want to do and can't, but in the things you've never considered doing - Richard Bandler

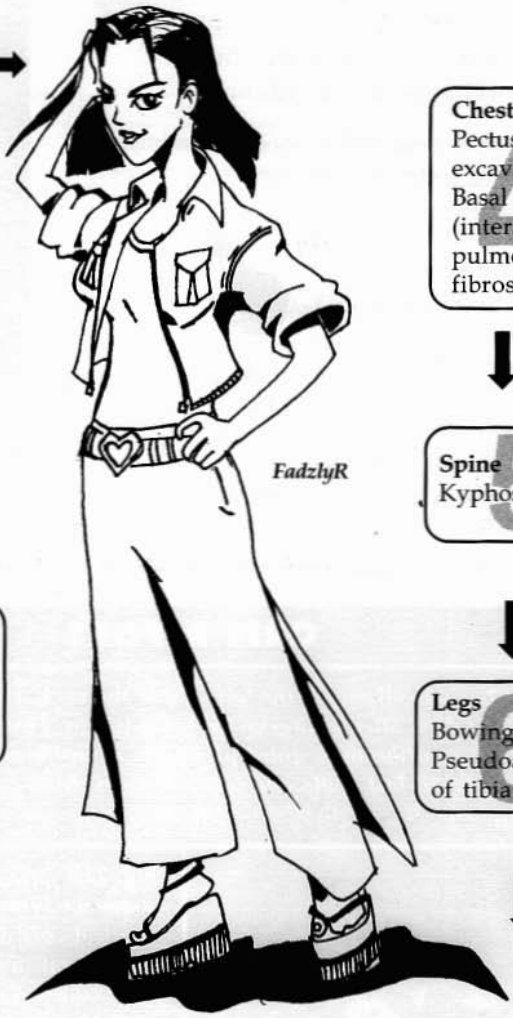
# NF-1

"This patient had multiple skin lesions since childhood - examine her"

**1 General inspection**
Neurofibromas
Plexiform neurofibromas
Short stature

**2 Axilla**
Freckling

**3 Face**
Lisch nodules*
Visual acuity / optic atrophy (optic nerve glioma)




**4 Chest**
Pectus excavatum
Basal crackles (interstitial pulmonary fibrosis)

**5 Spine**
Kyphoscoliosis

**6 Legs**
Bowing of tibia
Pseudoarthrosis of tibia

**7 Excuse me Sir, I would like to complete my examination by checking the:**
Blood pressure (renal artery stenosis, pheochromocytoma)
Family history of similar skin disorder

*best seen on slit-lamp examination.

## CASE 23 PSORIASIS / PSORIATIC ARTHRITIS ★★

- chronic erythemato-squamous skin disease characterized by abnormal keratinocyte proliferation.
- both sexes equally affected.
- age of onset: usually 20-30 years.
- family history in one-third of cases.

*VIP!*

Diagnostic clues for PSA:
- **asymmetrical oligoarthritis**
- **DIPJ involvement**
- positive family history
- rash and nail changes

*Clinical types of psoriasis*

**a) Plague psoriasis** (Fig. 23.1-2 - Section 2) - erythematous lesions covered by silvery scales seen at extensor surface of knees / elbows, trunk, sacral area and scalp.

**b) Inverse psoriasis -** smooth inflammed lesions without scaling seen at groins, axilla, inframammary areas.

**c) Pustular psoriasis -** sterile pustules at the hands and feet.

**d) Erythrodermic psoriasis -** generalized erythema with few scaling lesions.

*Cutaneous signs in psoriasis*

**Koebner phenomenon** - appearance of skin lesions at the site of trauma.
**Reverse Keobner phenomenon** - healing at the site of trauma.
**Auspitz's sign** - removal of scales on the plagues reveals fine dots of bleeding points.

**e) Nail psoriasis -** nail pitting (Fig. 23.3 - Section 2), onycholysis (the nail becomes detached distally from its plate), ridging and discoloration.

**f) Psoriatic arthritis (PSA)**

- the diagnostic criteria for PSA are (Moll and Wright):
  - inflammatory arthritis (peripheral arthritis ± sacroiliitis ± spondylitis)
  - presence of psoriasis
  - absence of rheumatoid factor
- five clinical patterns of PSA:
  - asymmetrical oligoarthritis
  - rheumatoid arthritis-like (Fig. 23.4 - Section 2)
  - arthritis mutilans
  - distal interphalangeal joints (DIPJ) only (Fig. 23.5 - Section 2)
  - spondylitis

*Investigation of psoriasis*

- skin biopsy - usually not needed (except in erythrodermic psoriasis).
- Xray - joint erosion / space narrowing, periostitis, osteolysis ("pencil-in-cup" appearance), resorption of tufts of distal phalanges, spondylitis.

*VIP!* Look hard for **hidden psoriatic plagues** at natal cleft, behind the ear and in the hairline

*Treatment of psoriasis*

- skin lesions - topical (dithranol, tar, steroid), systemic (photochemotherapy / PUVA).
- Psoriatic arthritis - TNF antagonists (improve symptoms, inhibit radiologic progression).

♣ *Pitfalls in the diagnosis of PSA*

- psoriatic rash may precede, coexist with or follow the onset of arthritis - in the latter case, family history of psoriasis is suggestive of PSA
- psoriasis may be hidden - natal cleft, below the breasts, umbilicus and behind the ear
- nail changes may be the sole physical sign

## CASE REPORT

This man with 20-year history of psoriasis complains of joint pain involving the hands and knee for one year. **Findings** (Fig. 23.5 - Section 2): Nail pitting present. Deformity of DIPJ of right index finger. Psoriatic plagues on trunk. **Xray hands** - Fig. 23.6. **Diagnosis**: *Psoriatic arthritis - DIPJ involvement.*

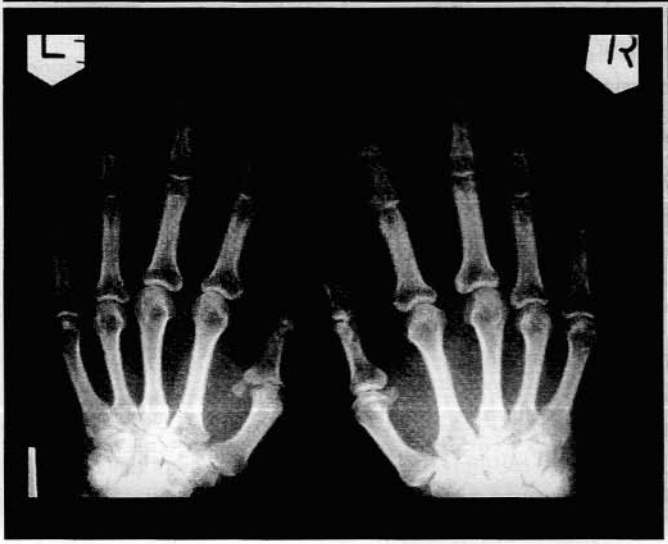



**Fig. 23.6** Psoriatic arthritis - Xray of hands showing loss of joint space at DIPJ of right index finger.

# SECTION 2

# COLORED IMAGES

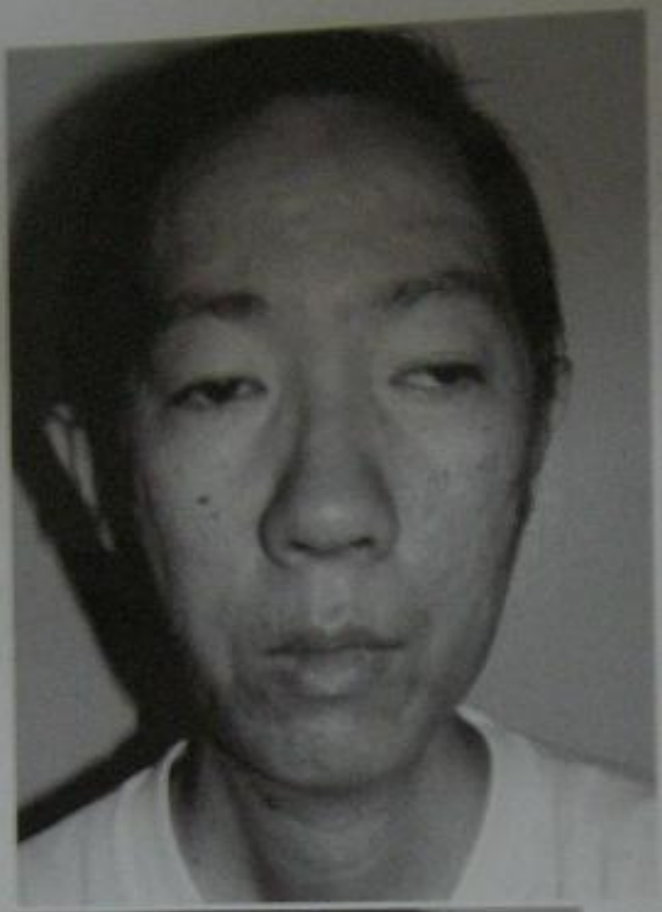


**Fig. 1.2 Dystrophia myotonica.** The typical facial features: i) narrowing of the lower half of face (due to wasting of masseter muscles), giving the face an elongated appearance, ii) pouting of the lower lip, iii) ptosis, iv) frontal balding, and v) expressionless face (patient was asked to smile - absent nasolabial folds bilaterally).

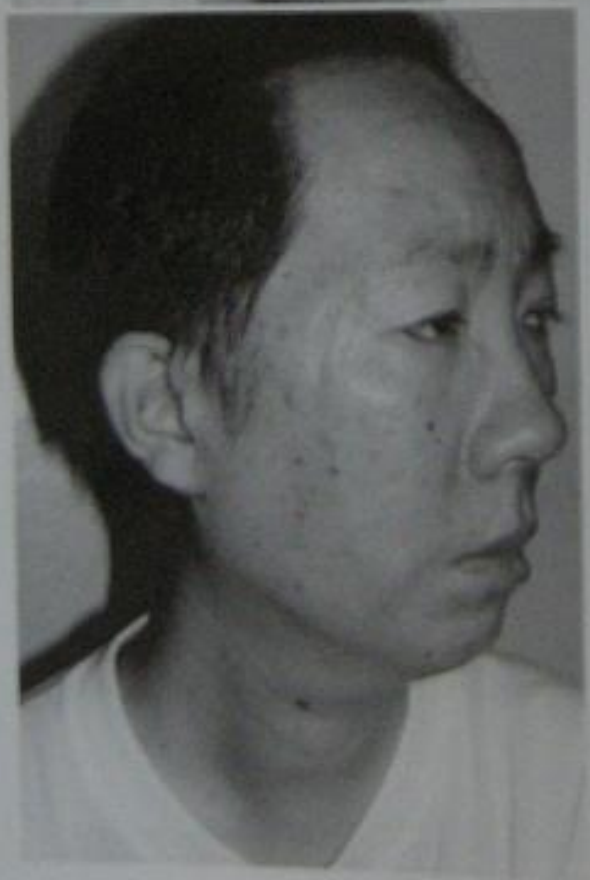


**Fig. 1.3 Dystrophia myotonica.** Wasting of sternomastoid, temporalis and masseter muscles. In some cases, exaggerated forward curving, thin neck may be seen ("swan neck").

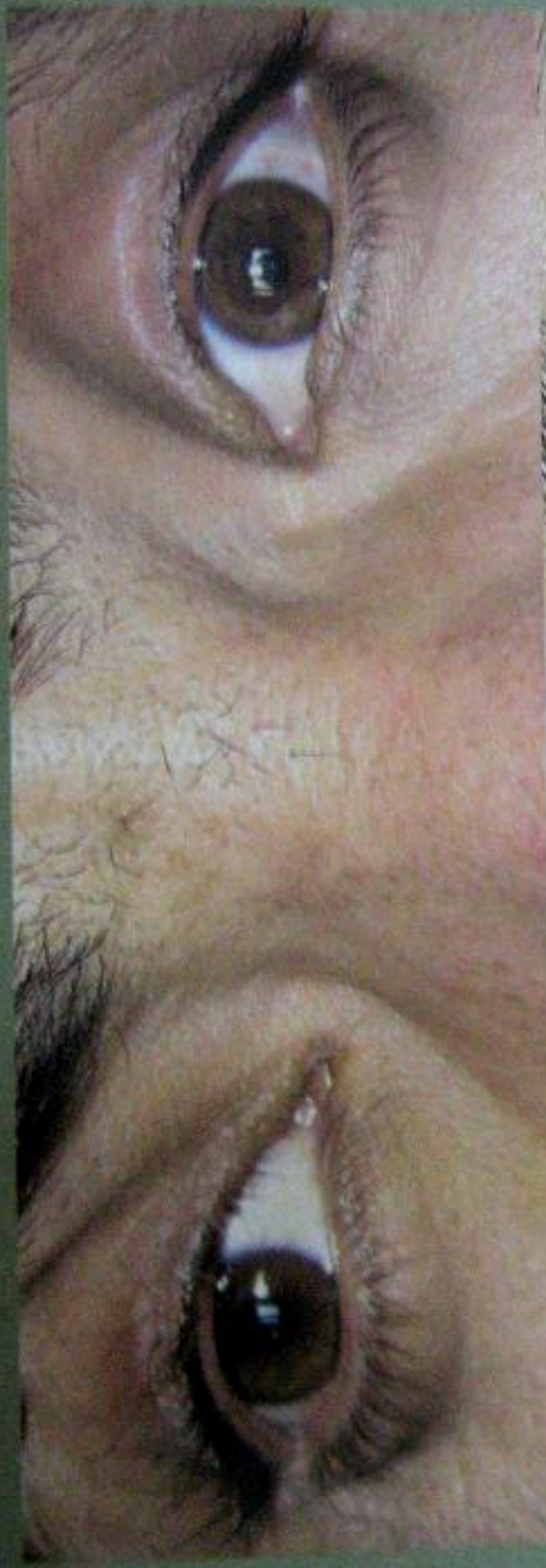


Fig. 2.2 Right surgical third cranial nerve palsy. The right pupil is dilated while the right eye is deviated laterally.

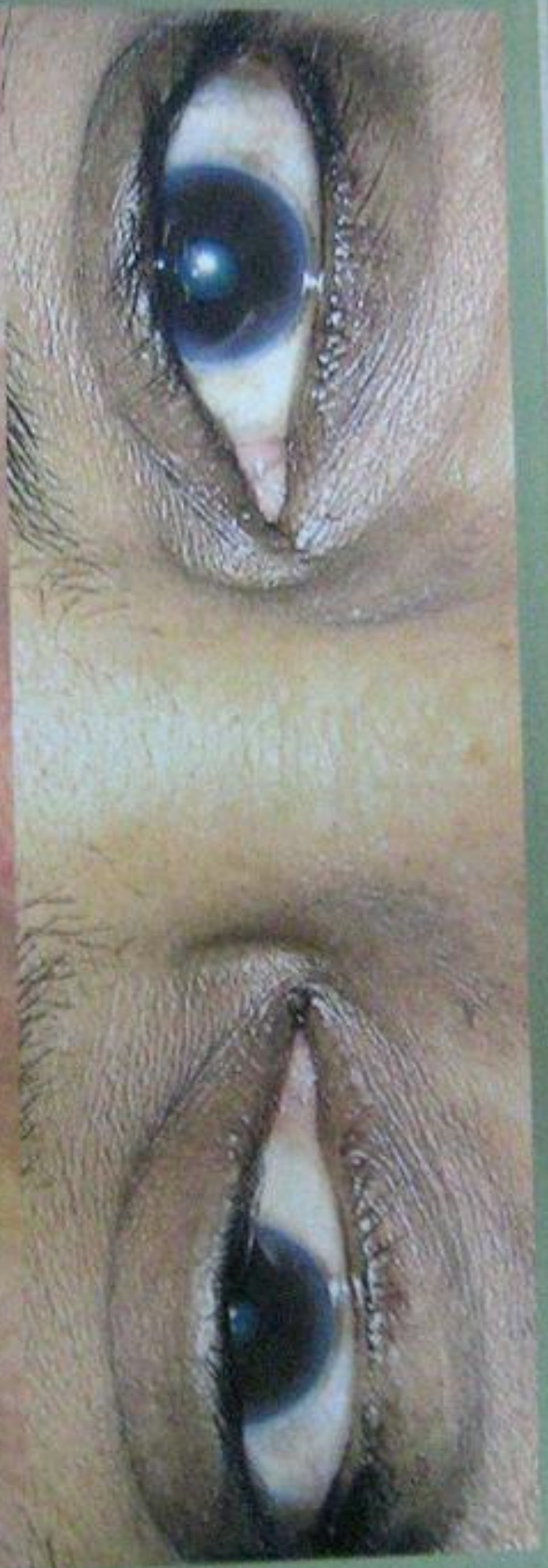


Fig. 2.4 Right Horner's syndrome. The small pupil and partial ptosis.

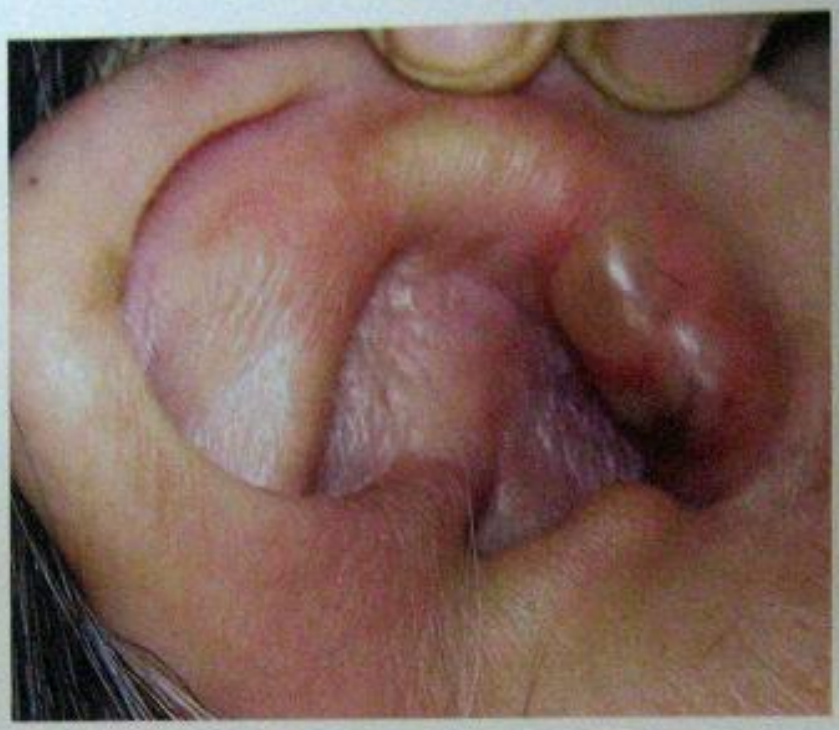


**Fig. 5.5 Ramsay Hunt syndrome.** The characteristic vesicles on the external ear.

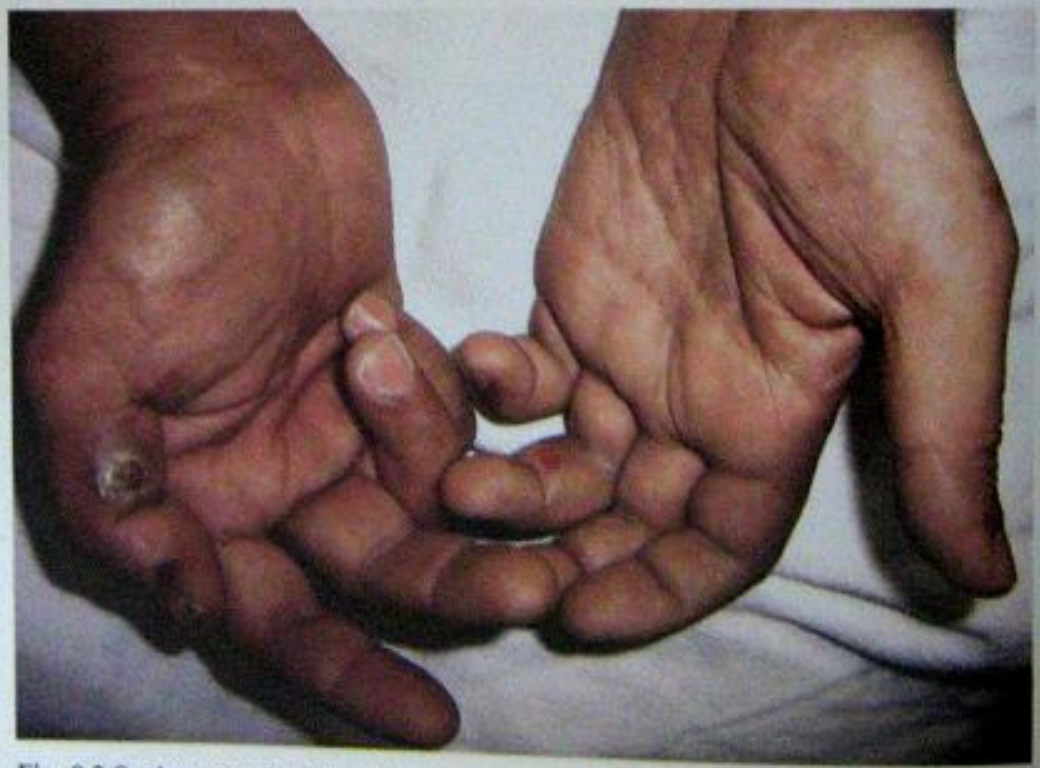


**Fig. 9.3 Syringomyelia.** Trophic ulcers (right thumb, left ring finger), which are caused by trauma (e.g. cigarrette burn) and cutaneous anesthesia, are characteristic of syringomyelia. Also note the mild wasting of the small muscles of the hands.

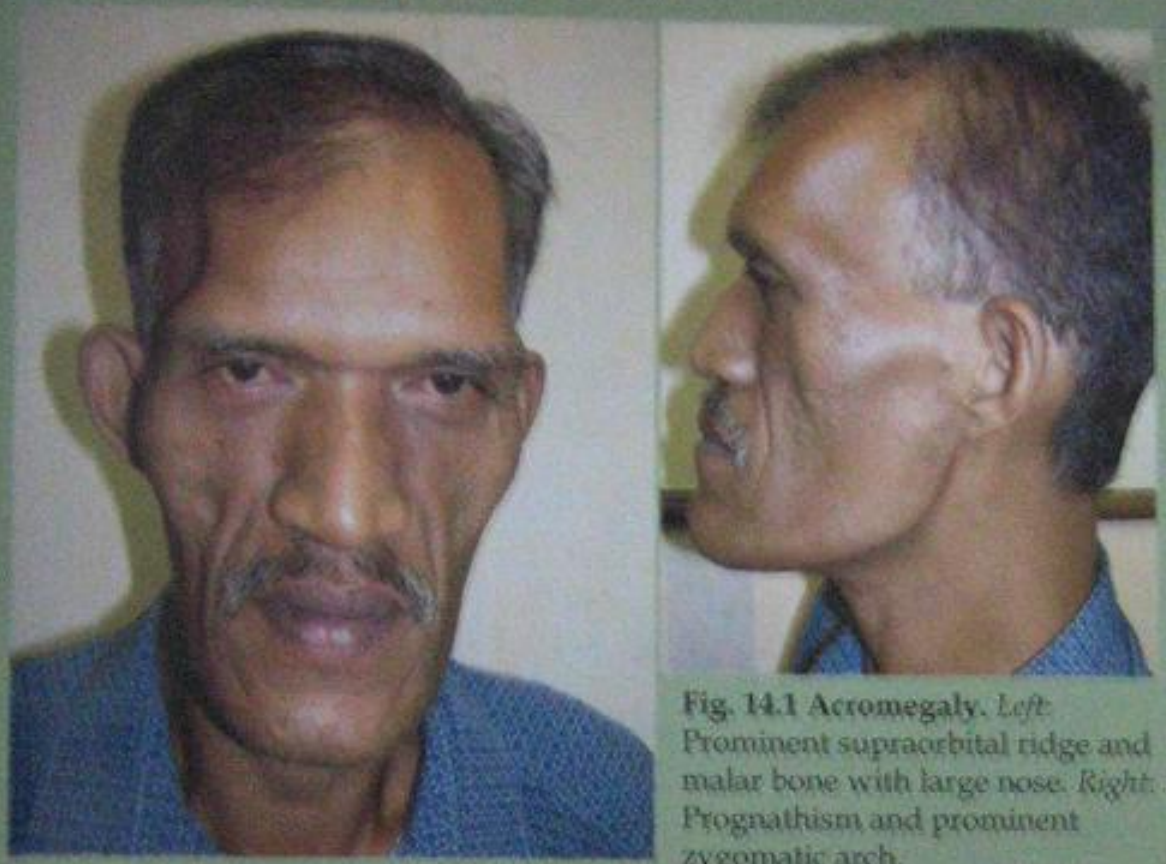


**Fig. 14.1 Acromegaly.** *Left:* Prominent supraorbital ridge and malar bone with large nose. *Right:* Prognathism and prominent zygomatic arch.

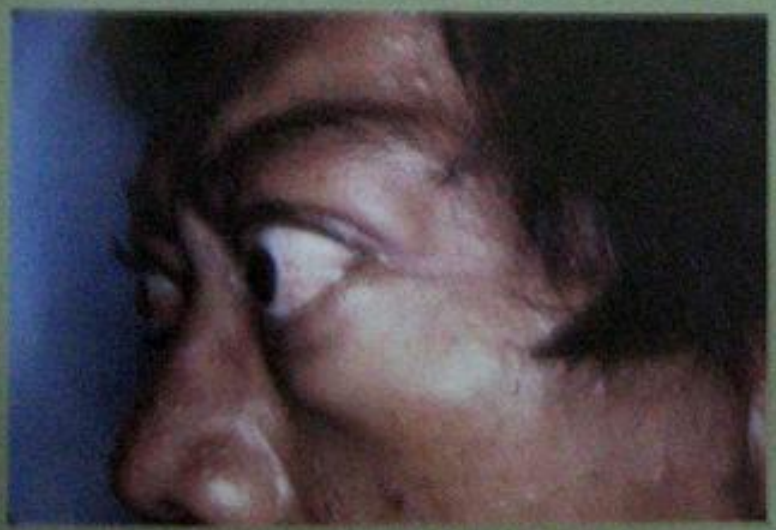
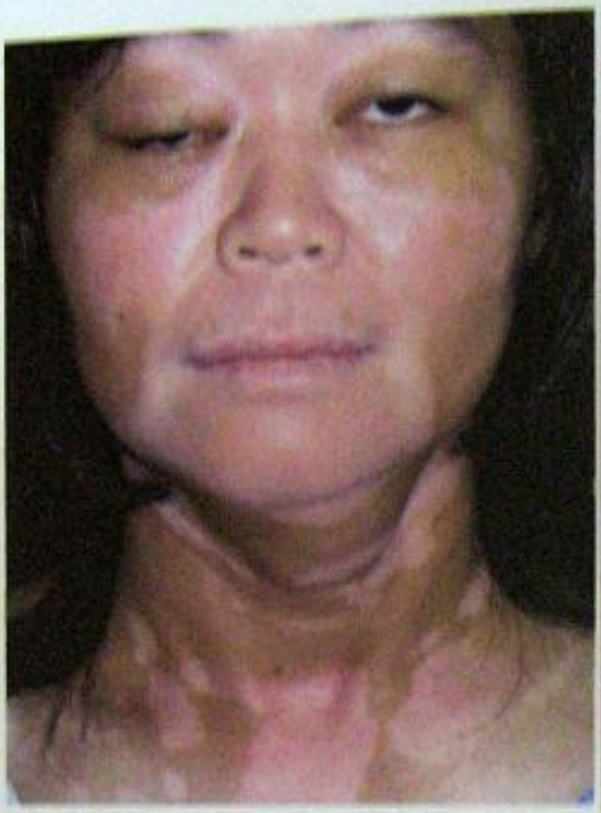


**Fig. 15.1 Grave's ophthalmopathy.** Bilateral exophthalmos (proptosis).

**Fig. 15.2 Grave's ophthalmopathy.** Bilateral periorbital edema, scleral injection, chemosis and exophthalmos (proptosis).



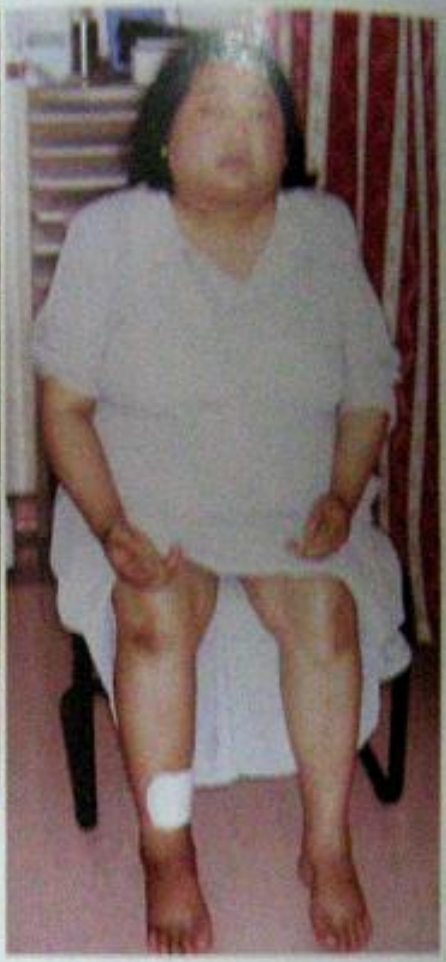


**Fig. 15.3 Autoimmune polyendocrine syndrome.** This lady has Grave's disease, vitiligo and Myasthenia gravis. Note the goiter and thyroidectomy scar.

**Fig. 16.3 Cushing's syndrome.** The "orange on stick" appearance (central obesity with wasted limbs) and poor healing of leg ulcer.

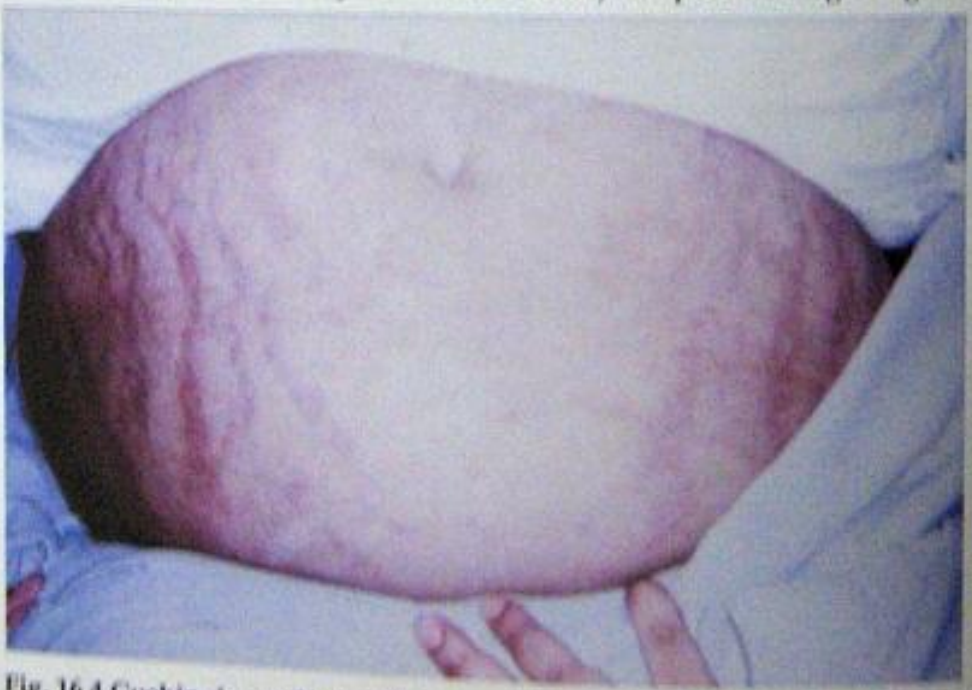


**Fig. 16.4 Cushing's syndrome.** The purplish striae on the abdomen.

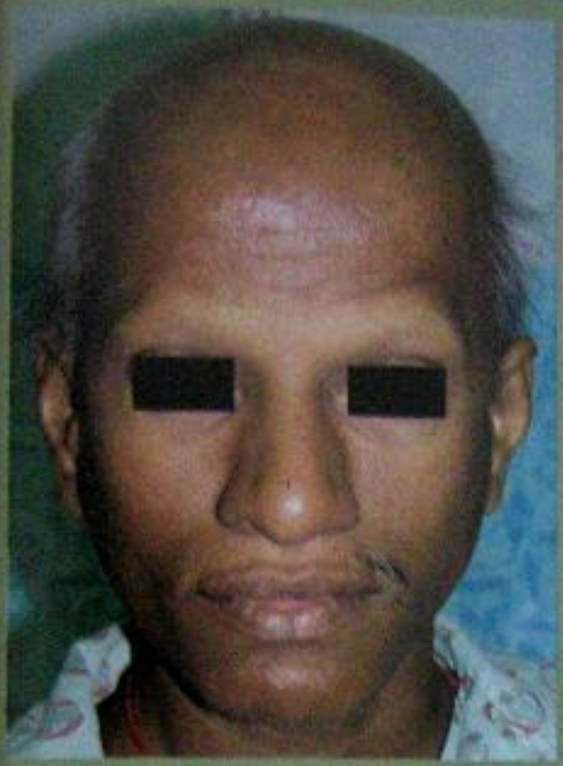


**Fig. 18.3 Hypopituitarism**. Absent eyebrows, sparse moustache and beards, smooth and pale skin.

**Fig. 18.4 Hypopituitarism**. Sparse pubic hair, which has "triangle with base up" distribution. His testes are also small.

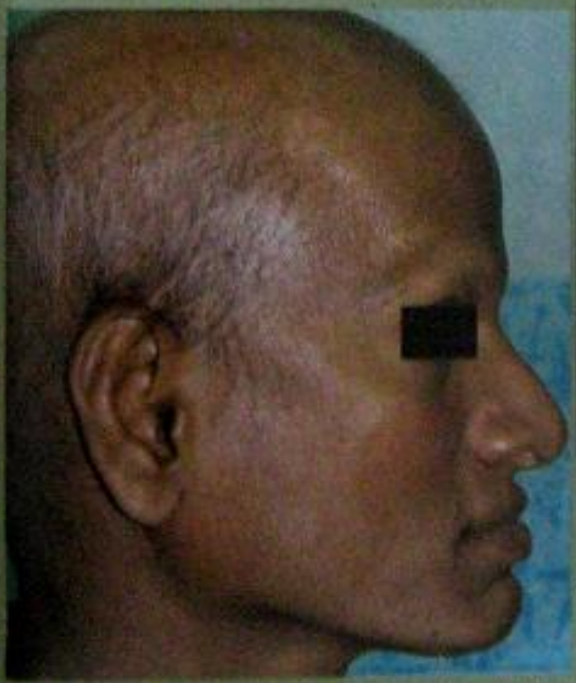


**Fig. 18.5 Hypopituitarism**. Absent facial hair (sideburn).

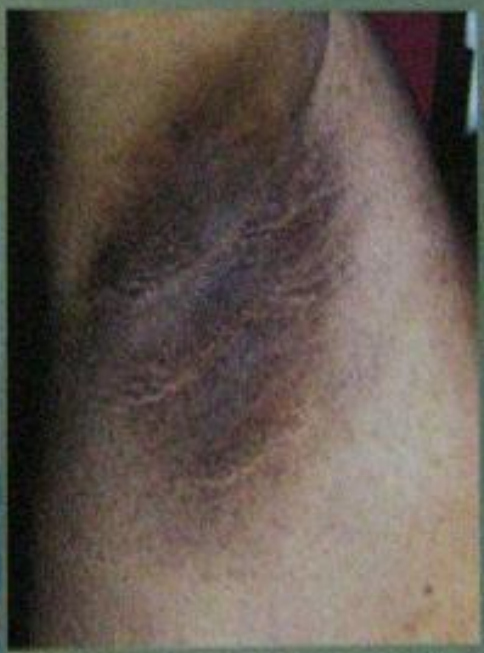


**Fig. 18.6 Hypopituitarism**. Absent axillary hair. The acanthosis nigricans is a coincidental finding.

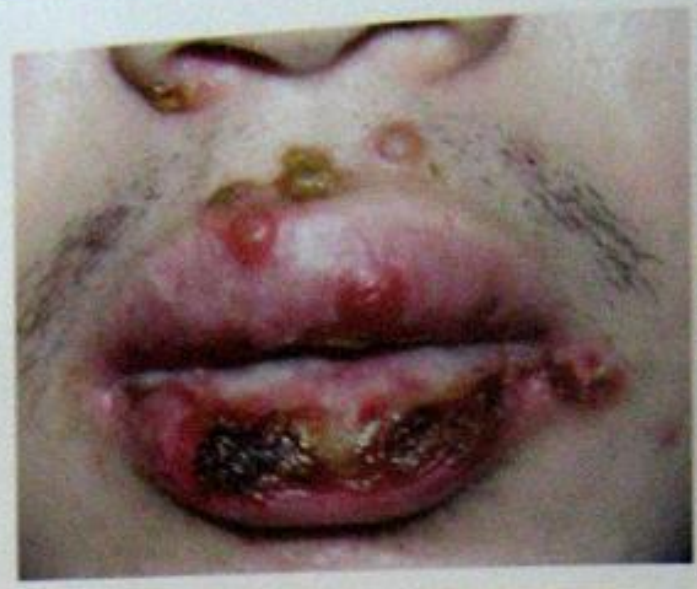


**Fig. 20.1 Stevens-Johnson syndrome due to sulphonamide.** The hemorrhagic crusting of the lips and some intact blisters. This patient developed skin lesions three days after receiving treatment of viral infection.

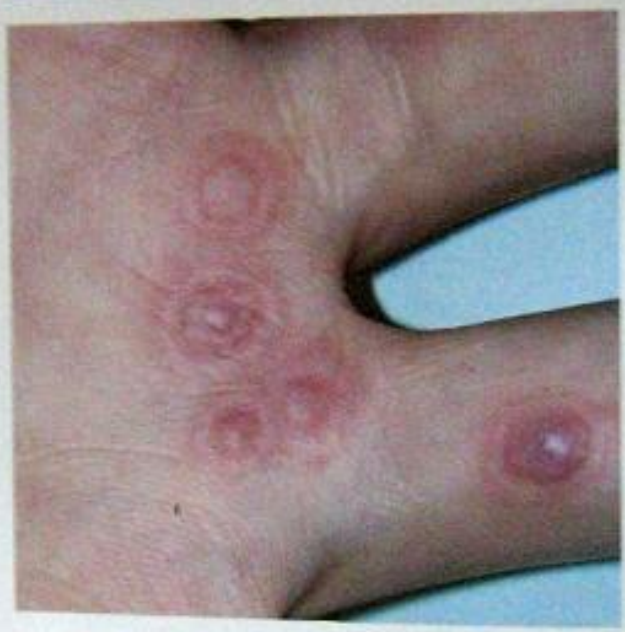
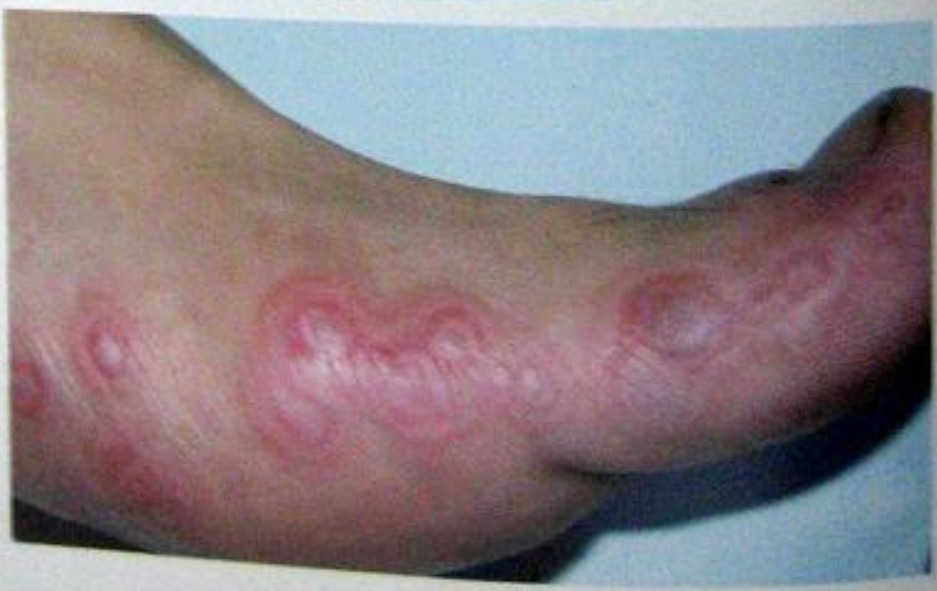


**Fig. 20.2 Stevens-Johnson syndrome.** The target lesions on the palm *(top)* and foot *(bottom)*. The target lesions consist of three concentric zones of color change: central dark, purple area or blister surrounded by a pale, edematous round zone, which in turn is surrounded by a peripheral rim of erythema.



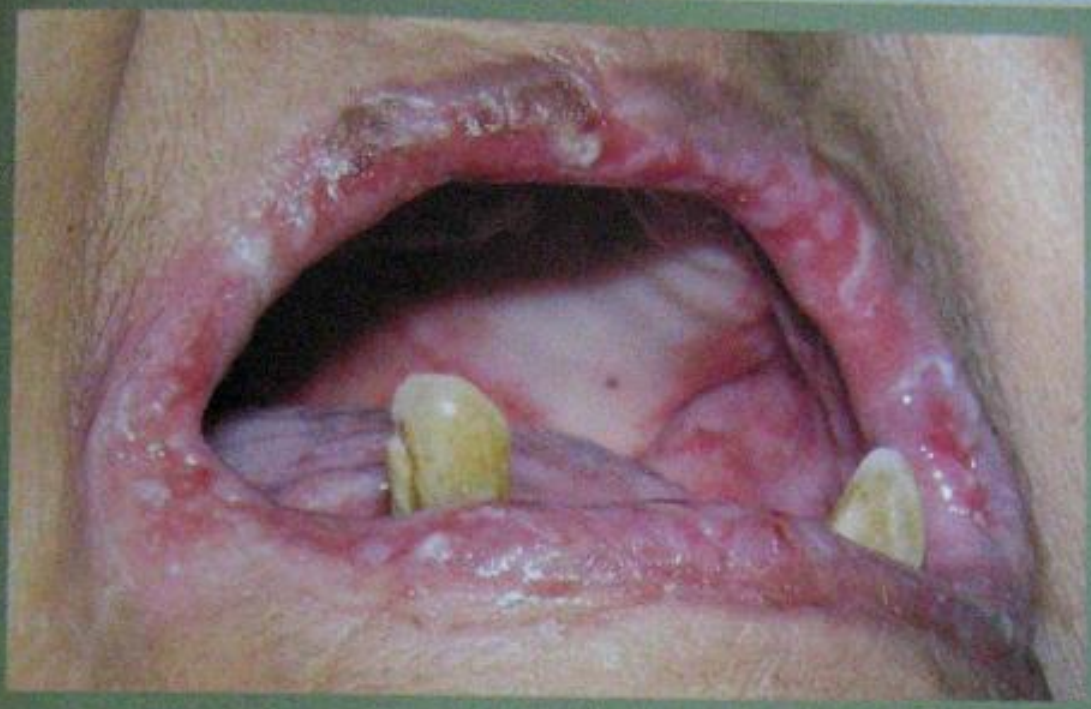


**Fig. 21.1 Pemphigus**. The typical shallow erosions in the oral cavity and on the lips.

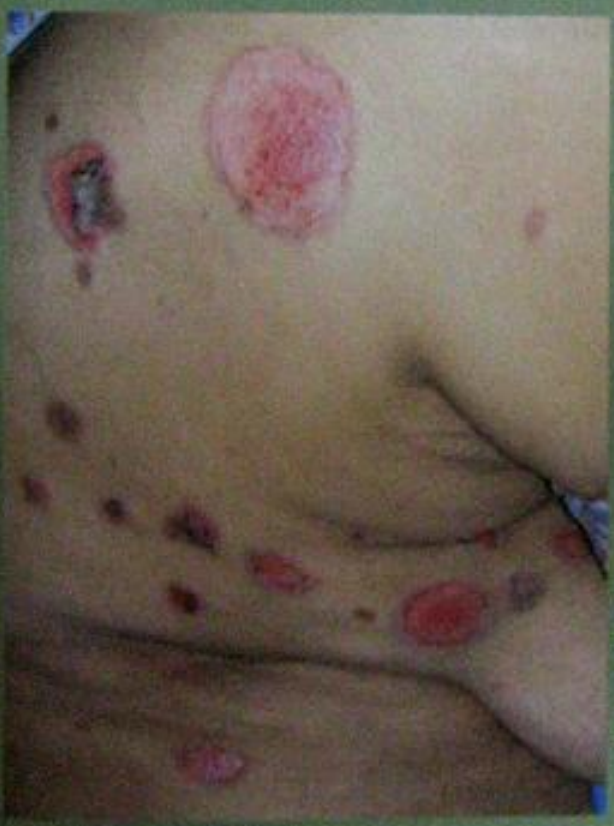


**Fig. 21.2 Pemphigus**. The fragile blisters easily rupture, giving rise to raw areas on the trunk.

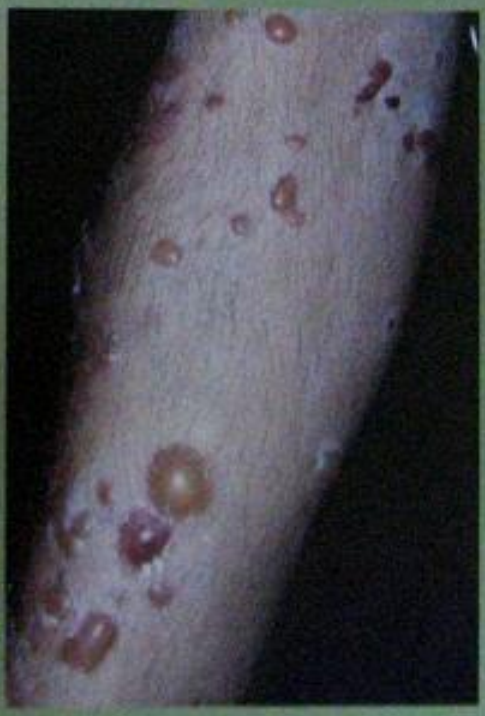


**Fig. 21.3 Pemphigoid**. The intact and tense blisters on the upper arm.

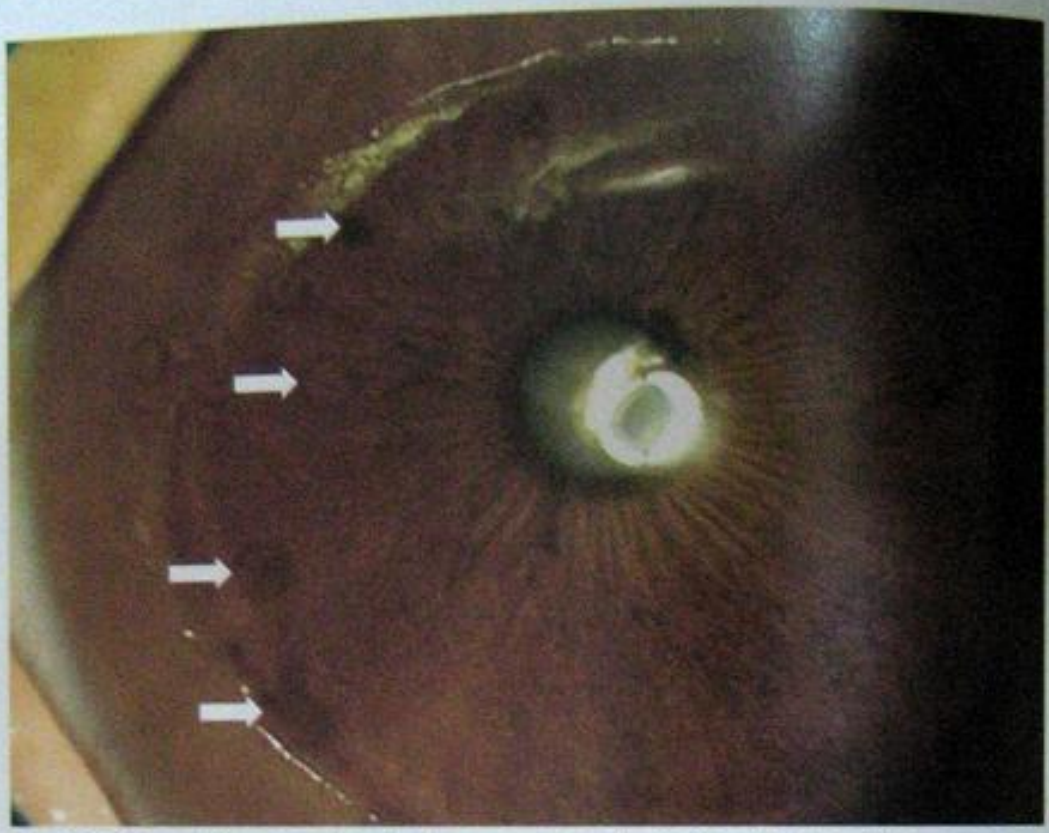


**Fig. 22.2 Neurofibromatosis** (slit-lamp examination). The Lisch nodules appear as several rounded dome-shaped structures (white arrowheads) on the surface of the iris, with the color ranging from brownish to dark brown.

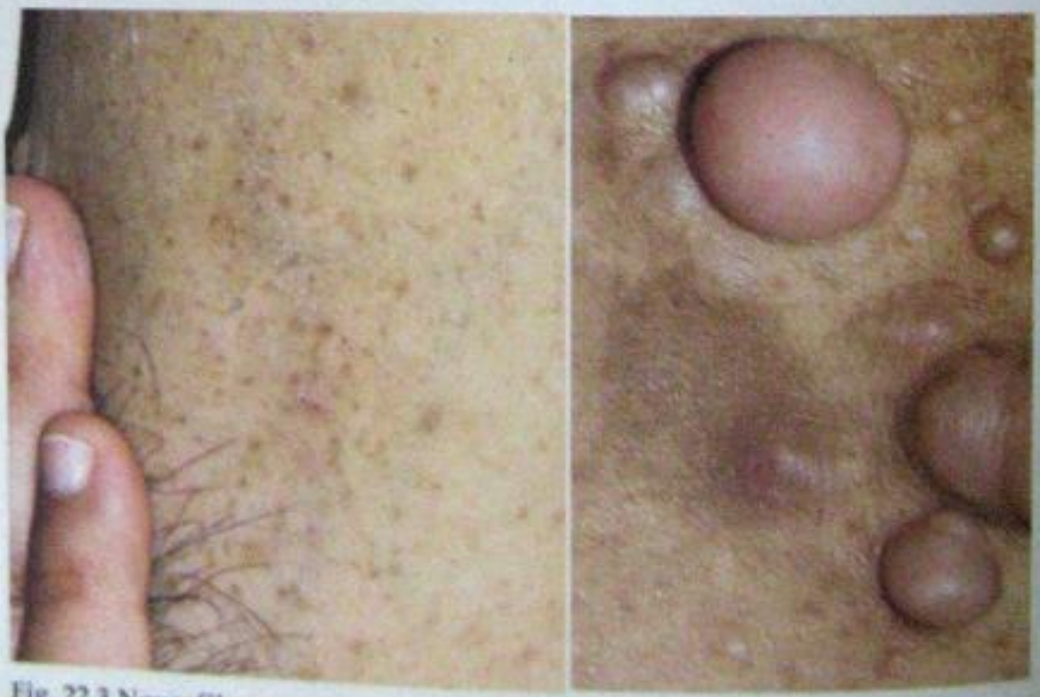


**Fig. 22.3 Neurofibromatosis.** *Left*: Small cafe-au-lait spots giving rise to the freckling of the axilla. *Right*: Close-up view of the neurofibromas and cafe-au-lait spot.

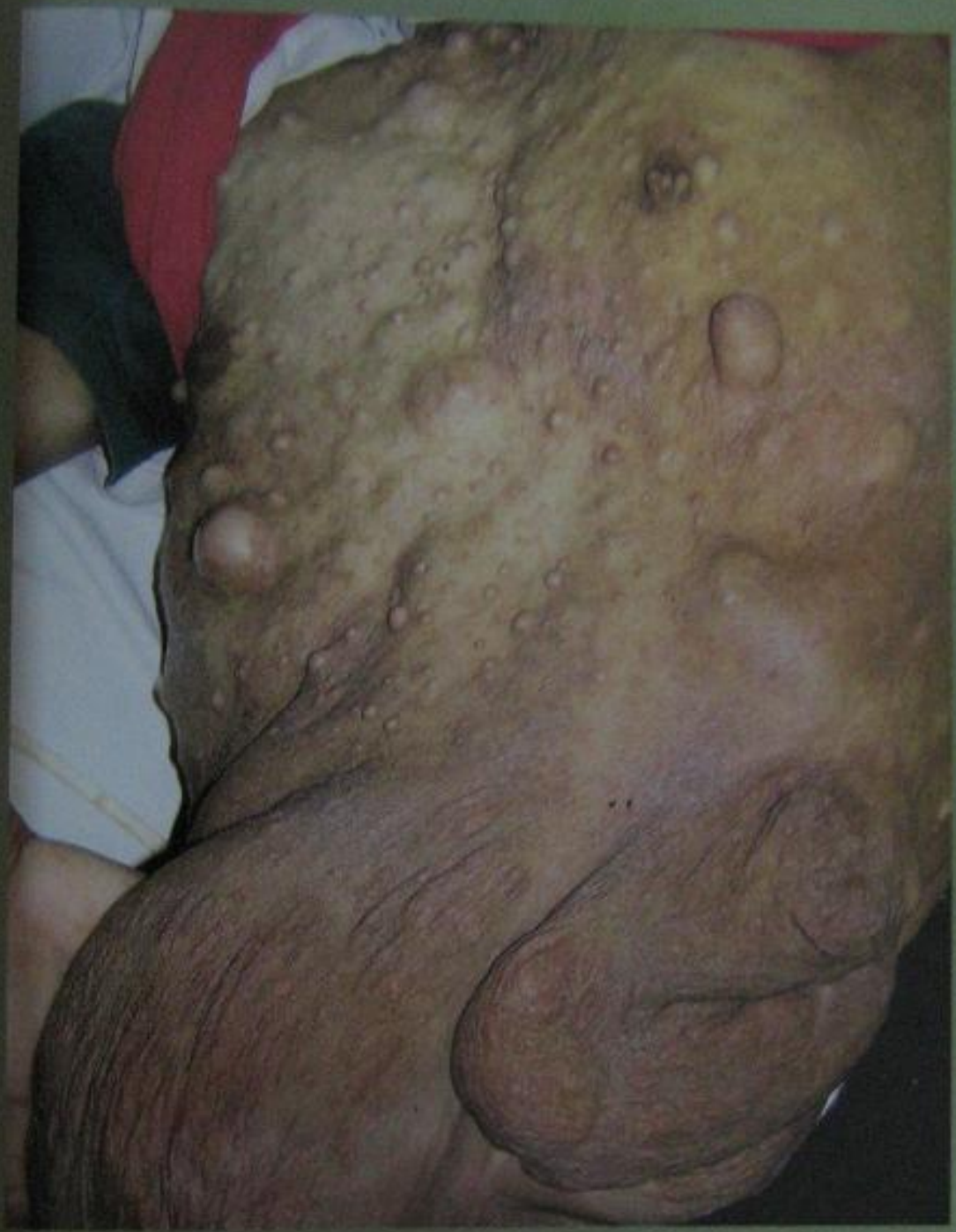


**Fig. 22.4 Neurofibromatosis**. Numerous neurofibromas with cafe-au-lait spots are seen on the chest. The giant plexiform neurofibromas on the abdomen leads to severe disfigurement.

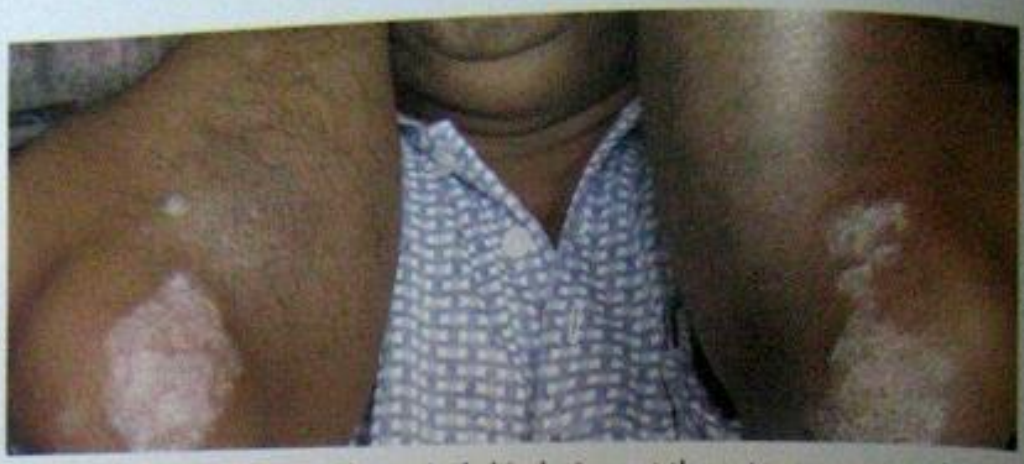
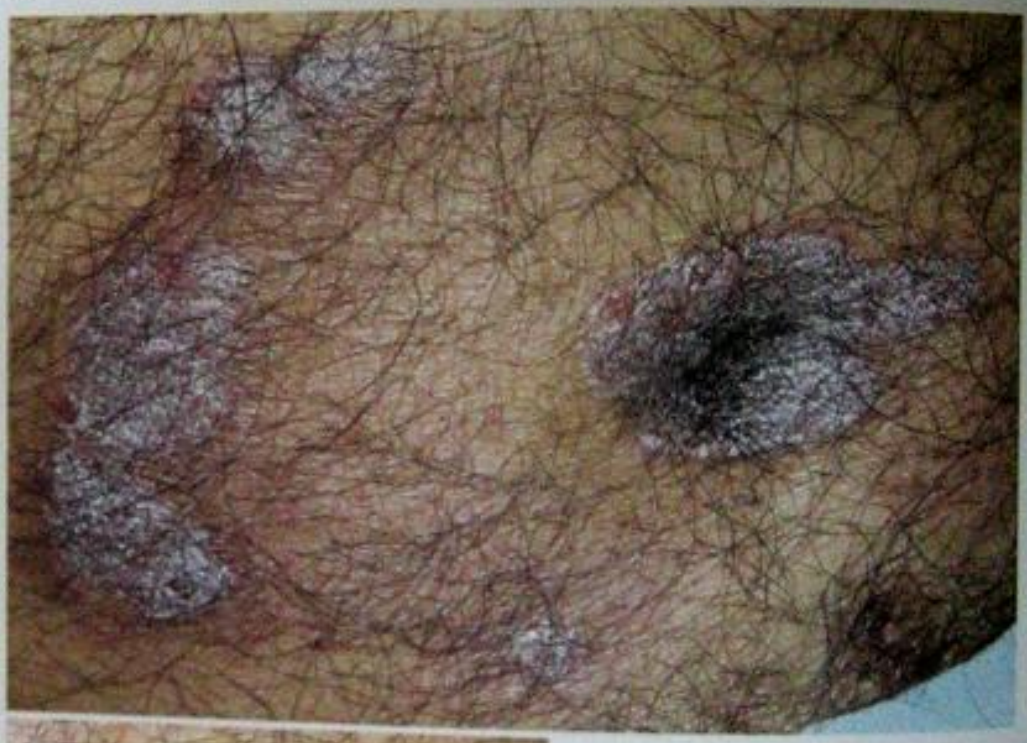


**Fig. 23.1 Plague psoriasis**. The typical skin lesions at the extensor aspect of elbows.



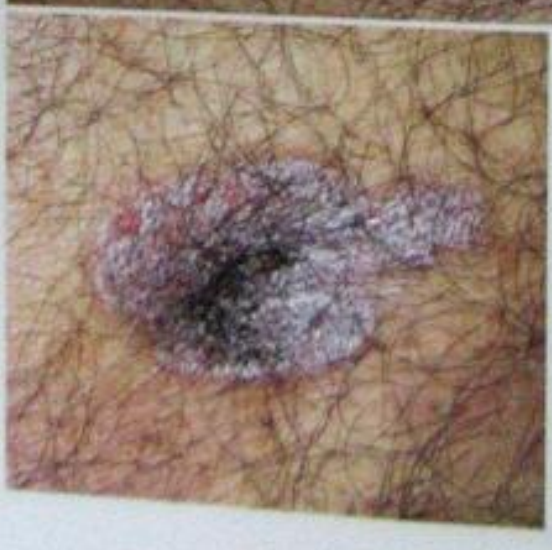


**Fig. 23.2 Plague psoriasis**. *Top:* Several plagues around the umbilicus with the characteristic silvery white scales and erythematous base. *Bottom:* Close-up view of the periumbilical lesion.

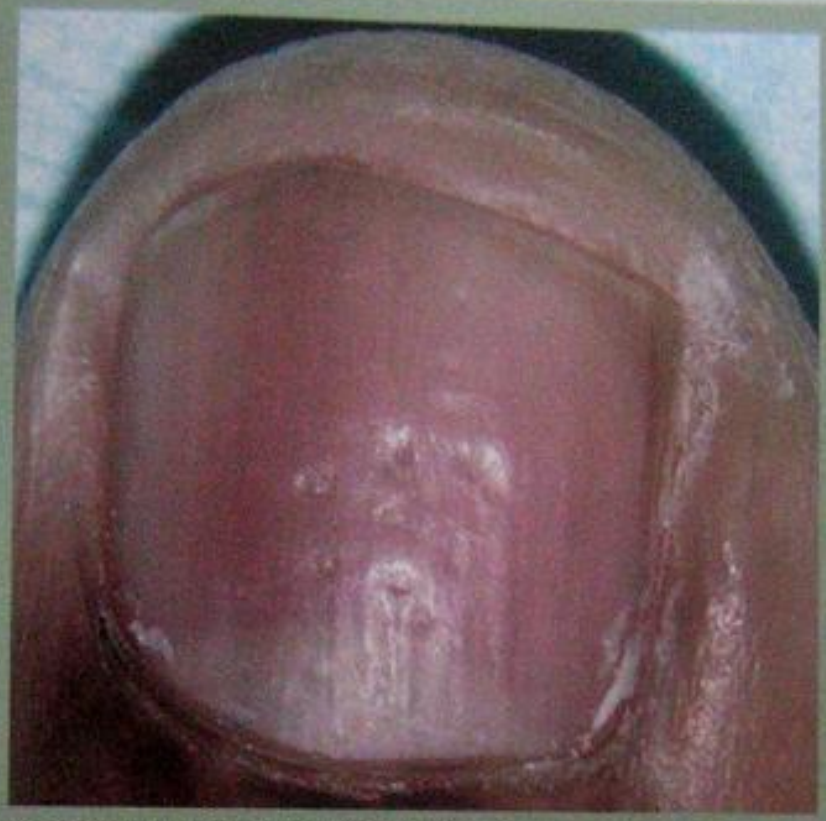


**Fig. 23.3 Psoriasis**. Nail pitting (the commonest cause is trauma).

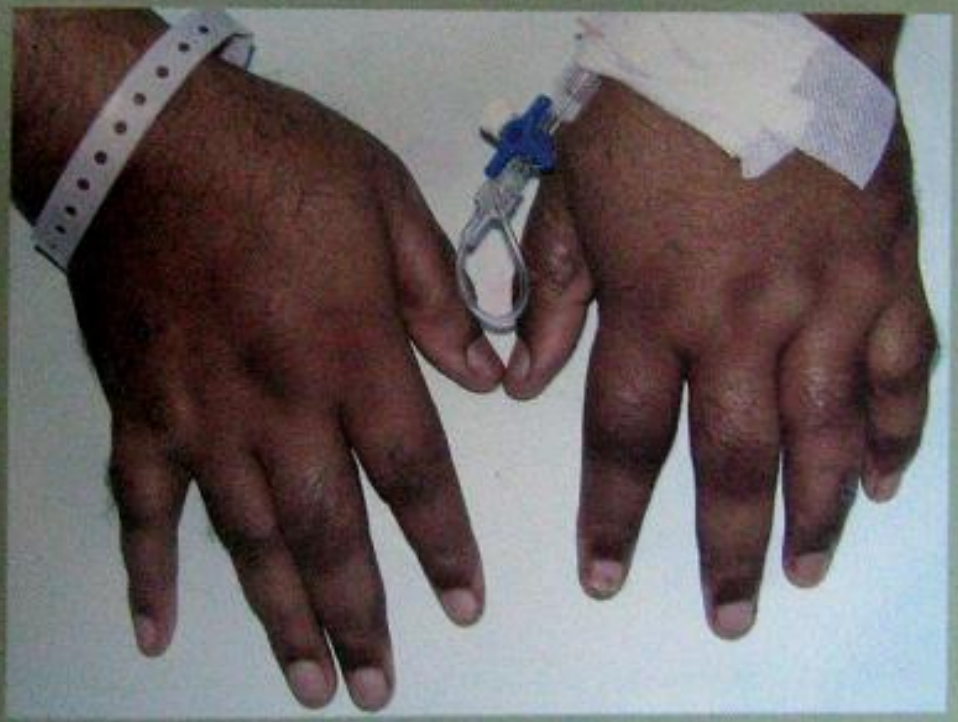


Fig. 23.4 **Psoriatic arthritis** (the rheumatoid arthritis-like subtype). Bilaterally symmetrical arthritis involving the metacarpophalangeal and proximal interphalangeal joints.

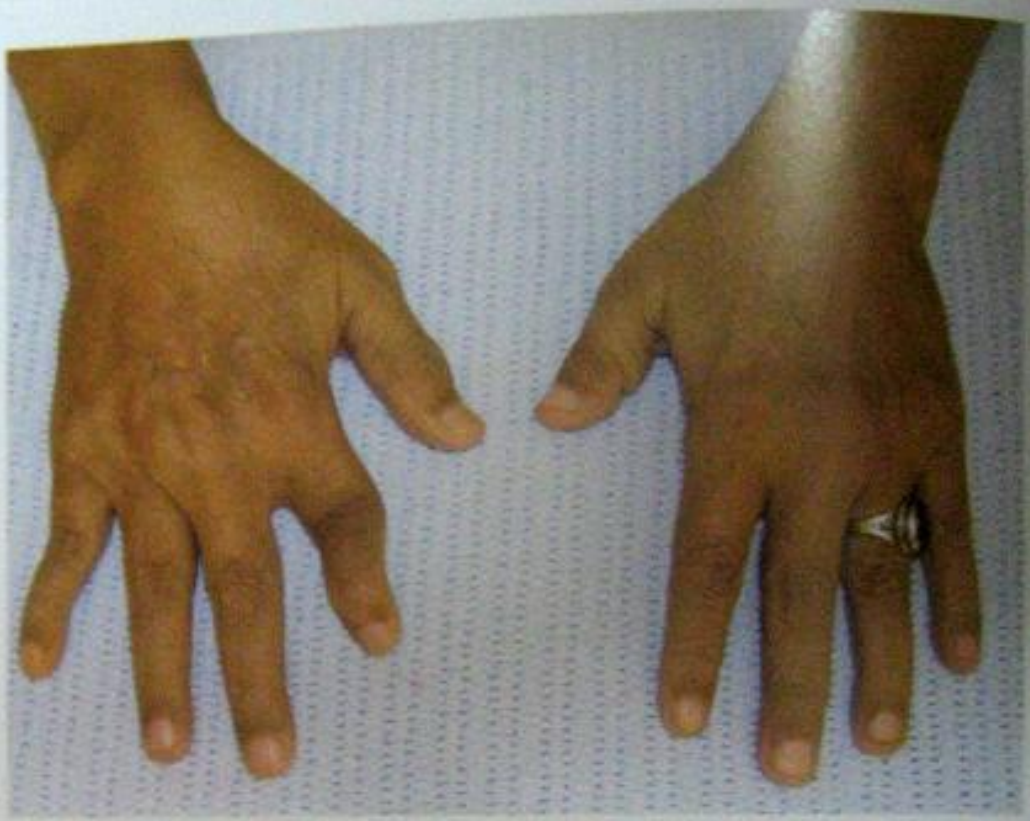


**Fig. 23.5 Psoriatic arthritis** (DIPJ subtype). The deformity of DIPJ of right index finger (note the asymmetry of the joint involvement at the hands).

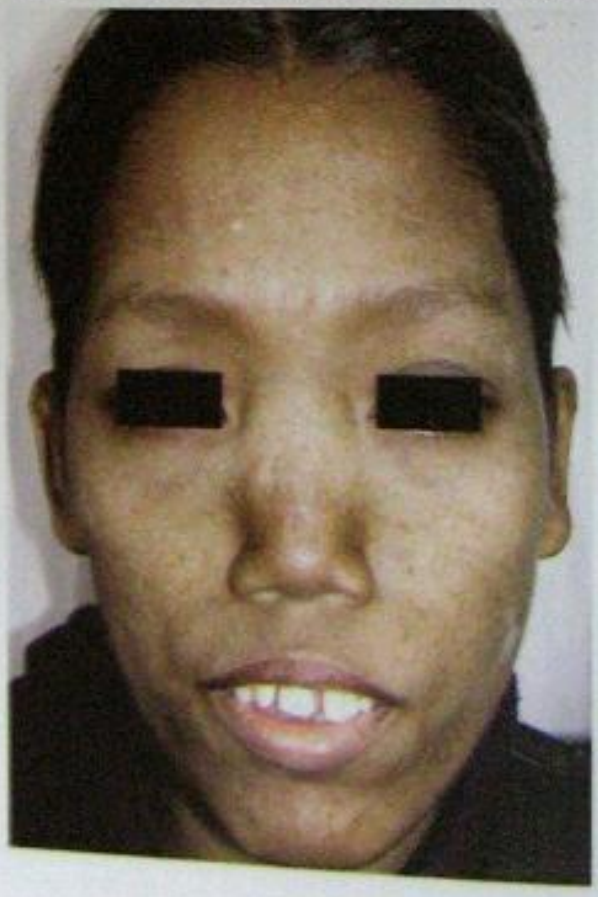


**Fig. 24.2 Beta-Thalassemia major**. The typical facies - frontal bossing, prominent maxilla, depressed nasal bridge, upper jaw protruberance and interdental separation. Note the slate-gray skin pigmentation due to iron overload.

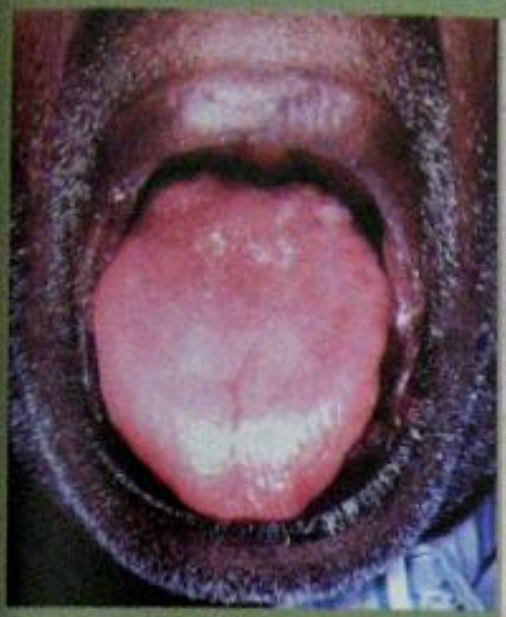


**Fig. 27.1 Iron deficiency anemia.** The smooth tongue (atrophic glossitis).

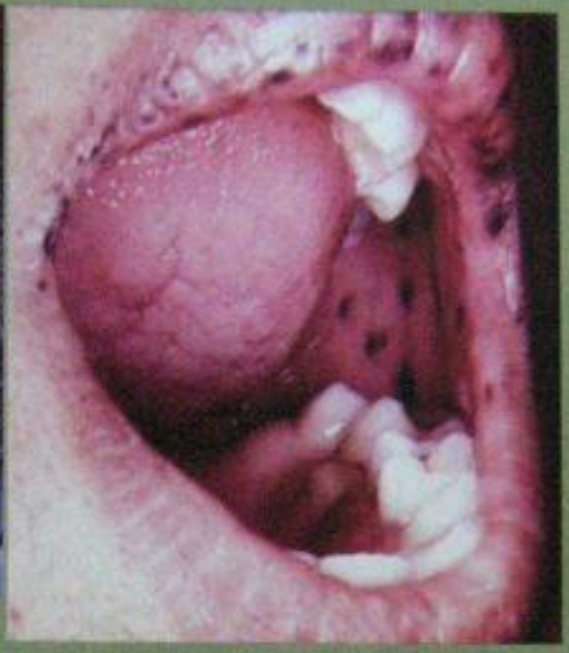


**Fig. 27.2 Peutz-Jeghers syndrome**. The pigmented freckles around the lips.

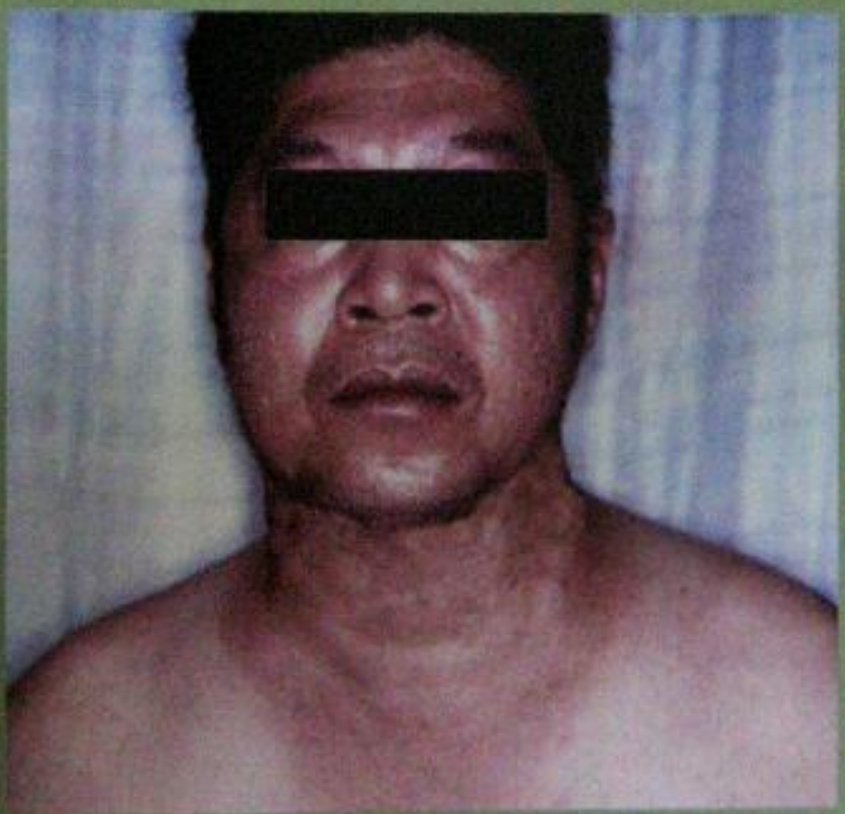


**Fig. 31.3 Superior vena cava obstruction** (bronchogenic carcinoma). The face and neck are edematous and cyanosed, giving the patient a "bloated" appearance. He also has conjunctival suffusion, bilateral nonpulsatile jugular vein distension with venous collaterals in the upper chest.

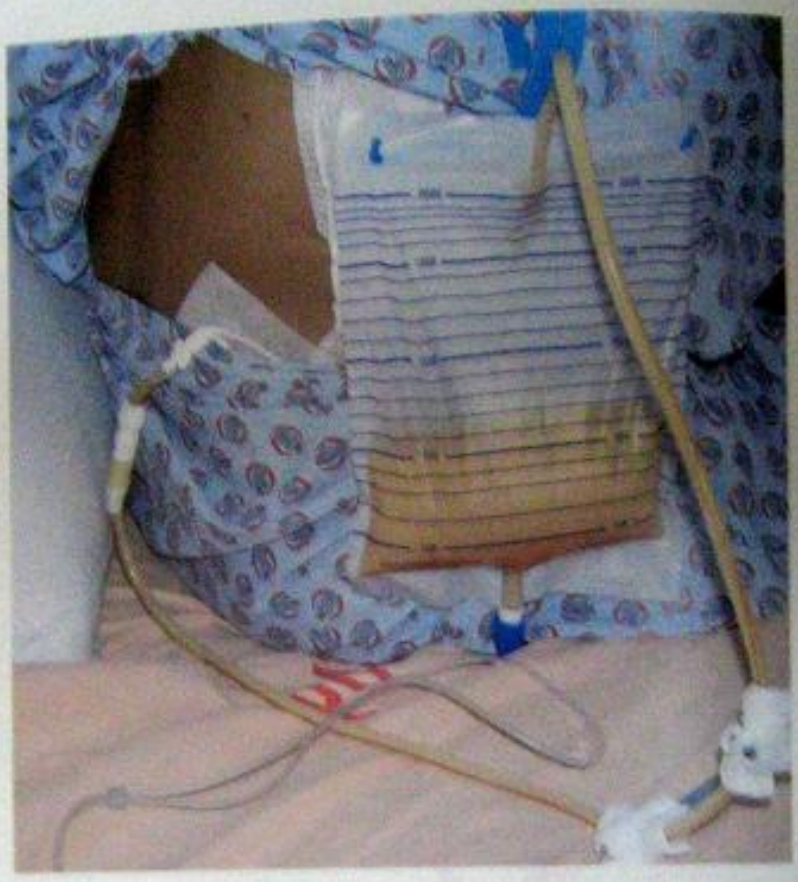


**Fig. 34 Chylothorax** (lymphoma). The pleural f uid is slightly pinkish due to traumatic tap (the classical appearance of chylothorax is milky white).

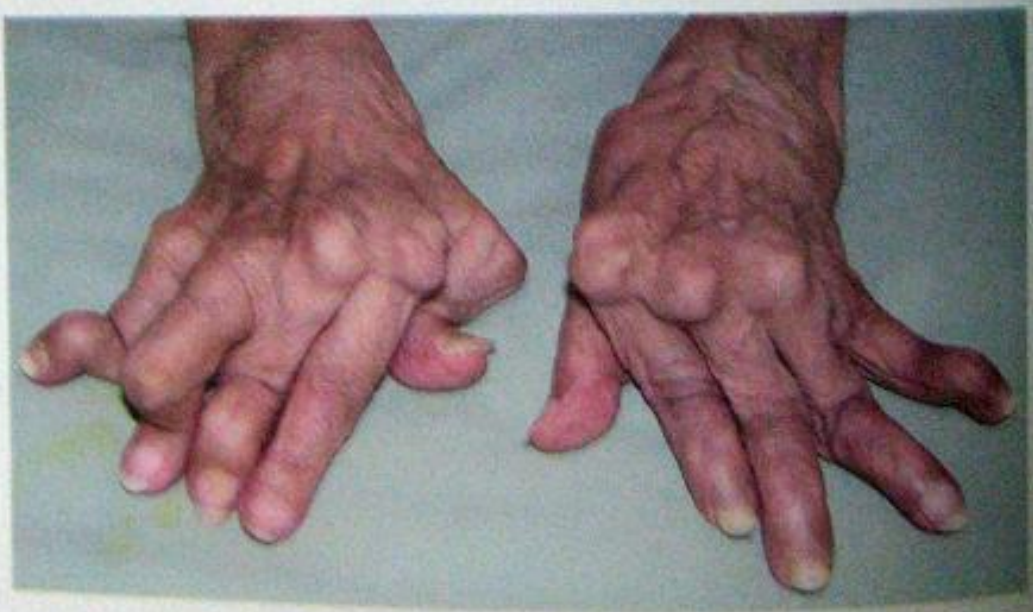


**Fig. 35.2 Rheumatoid arthritis**. Ulnar deviation, boutonniere (Z) deformity (thumbs, right ring f nger), swan-neck deformity (left little and ring f ngers, right little and middle f ngers), palmar subluxation at MCPJ and wasting of small muscles of the hands.

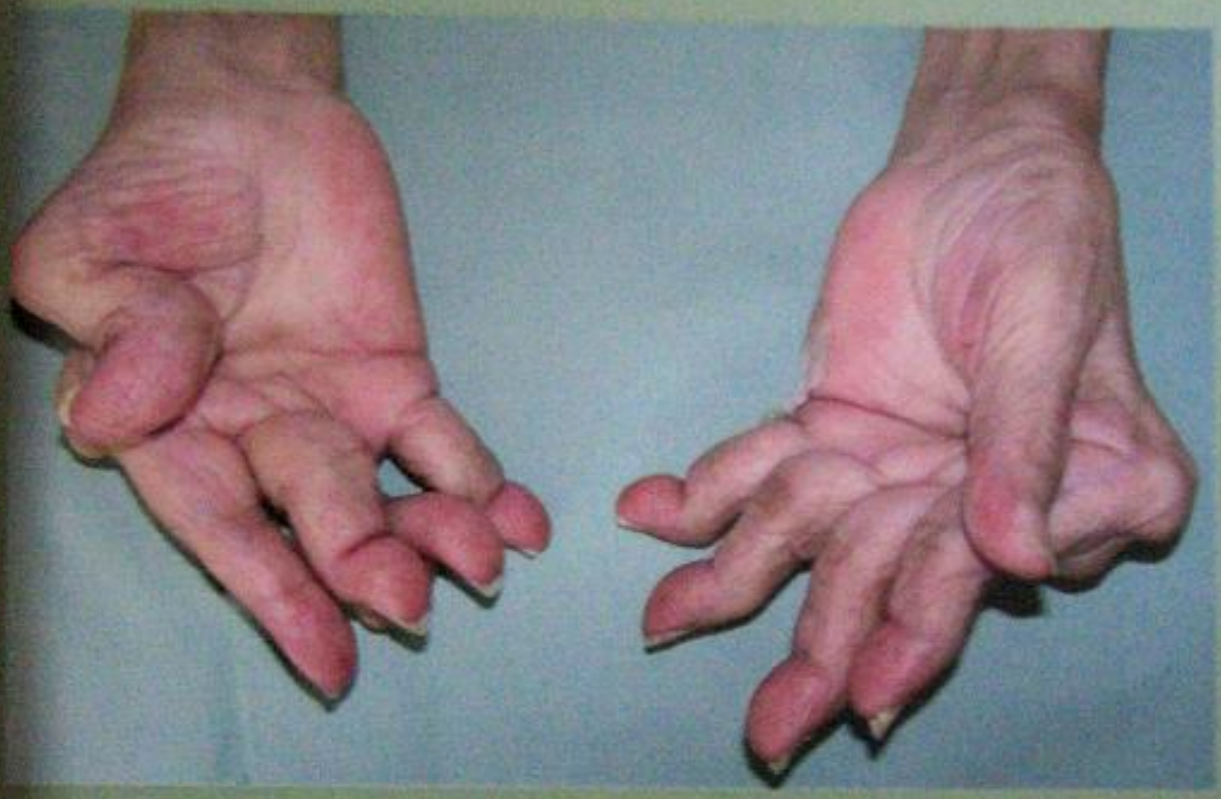


**Fig. 35.3 Rheumatoid arthritis**. Palmar erythema and wasting of small muscles of the hands.

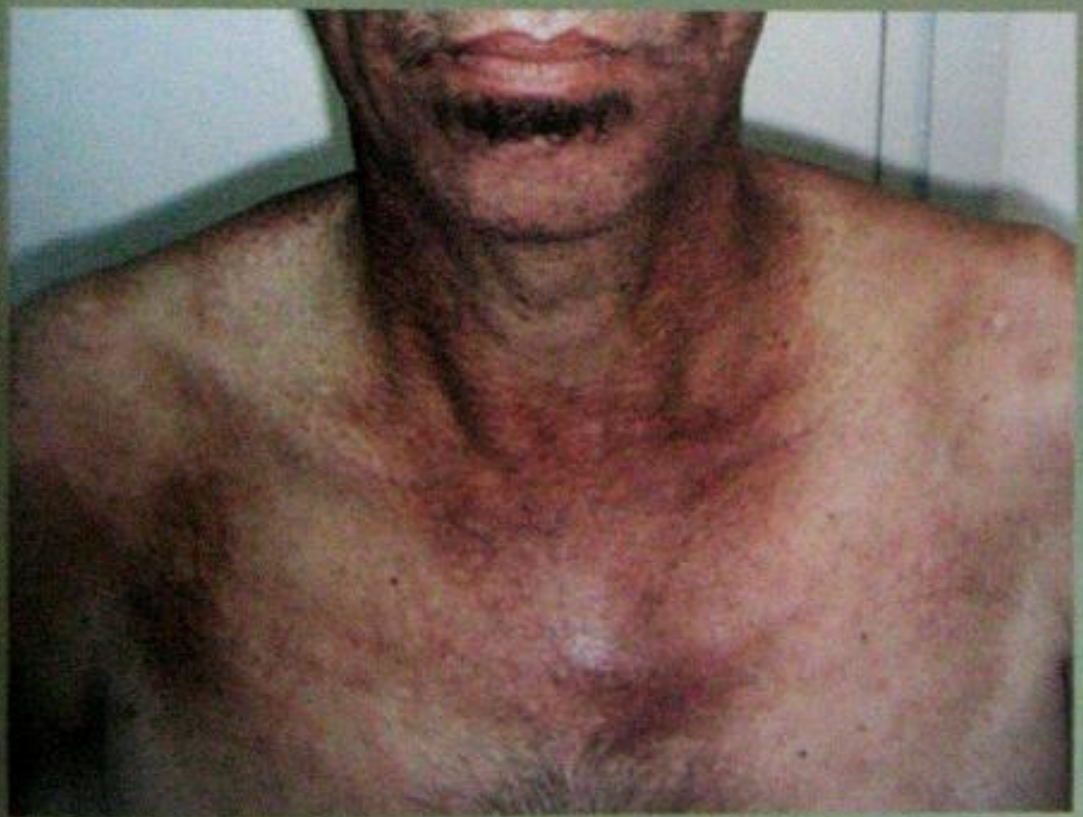


Fig. 37.1 **Dermatomyositis**. The flat, erythematous, photosensitive rash in the face, neck and anterior chest (V-sign).

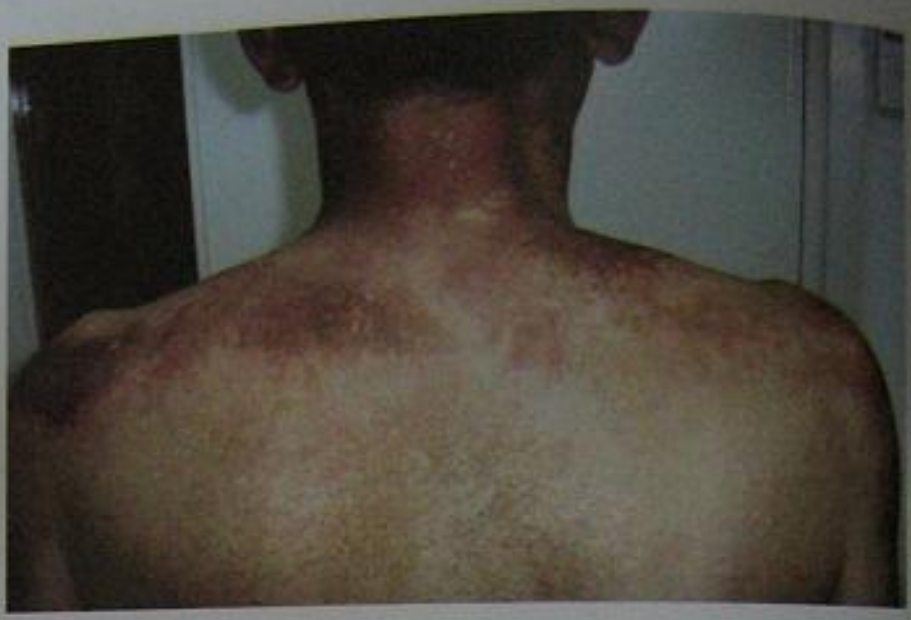


**Fig. 37.2 Dermatomyositis**. Photosensitive rash distributed in a "shawl" pattern over the shoulders and upper back (shawl sign).

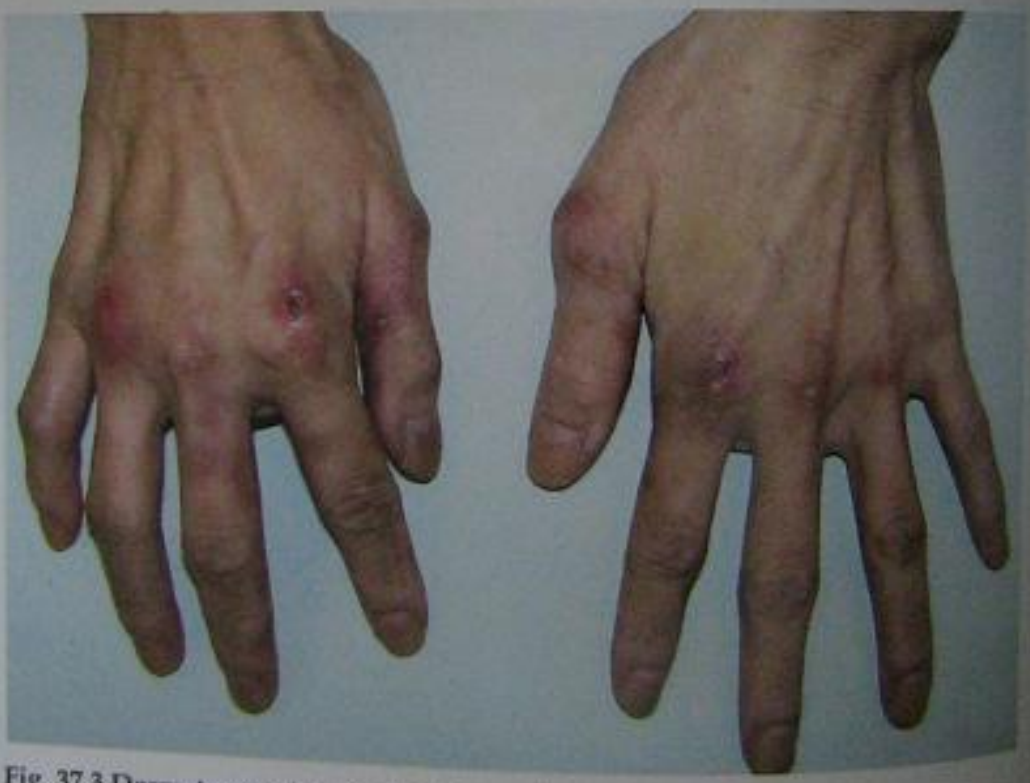


**Fig. 37.3 Dermatomyositis**. Gottron's papules on the knuckles.

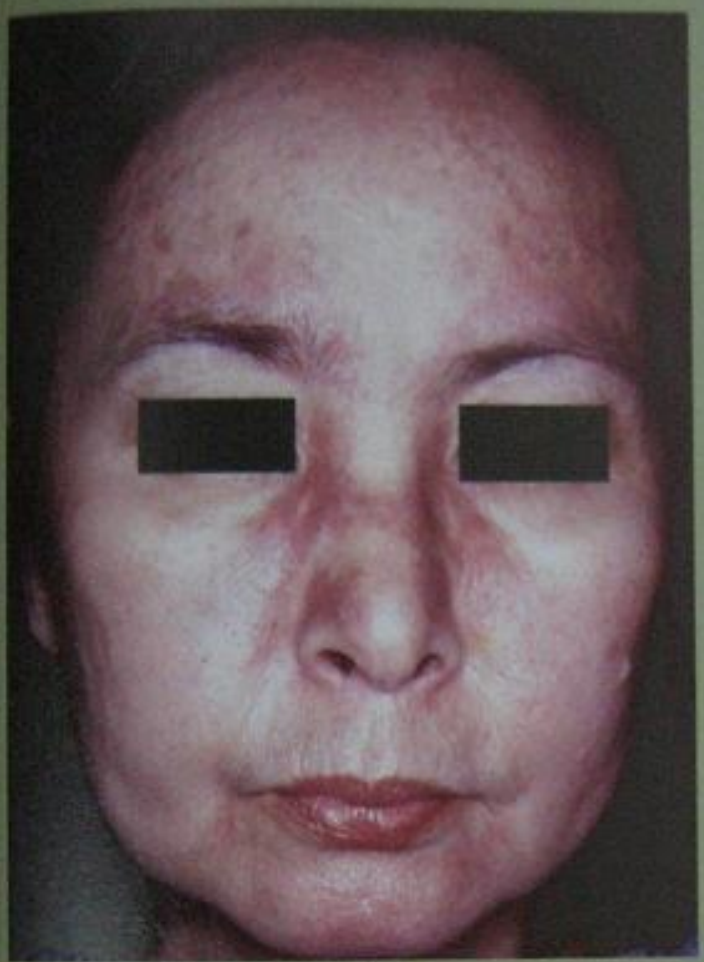


**Fig. 37.4 Dermatomyositis.** The characteristic heliotrope rash is purplish and distributed mainly around the eyebrows and over the forehead.

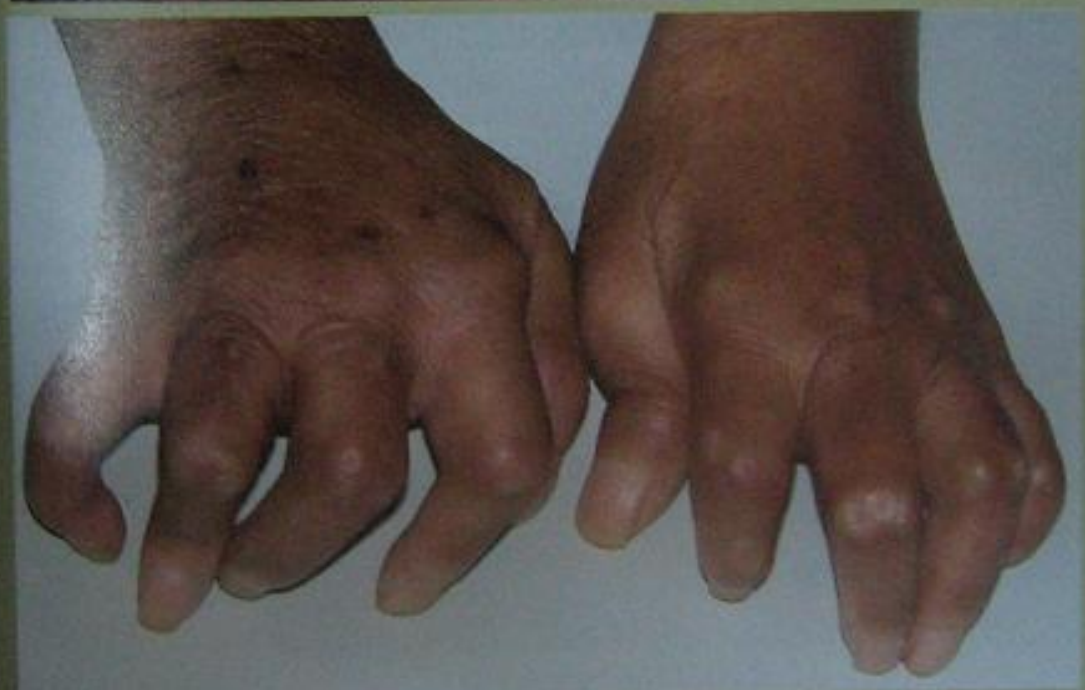


**Fig. 38.1 Scleroderma.** Subcutaneous calcific deposits (appearing as yellowish papular lesions over the knuckles) and tightening of the skin of fingers.

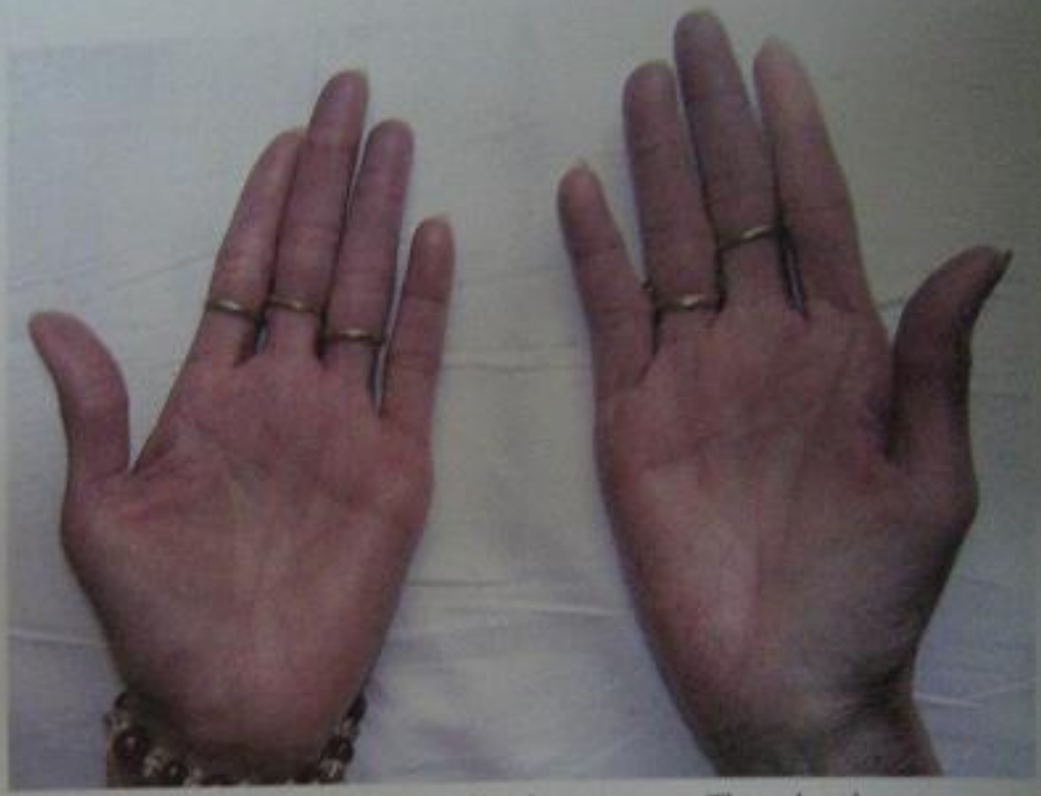


**Fig. 38.2 Scleroderma with Raynaud's phenomenon**. The color changes are precipitated by cold temperature (this photograph was taken in the air-conditioned exam hall).

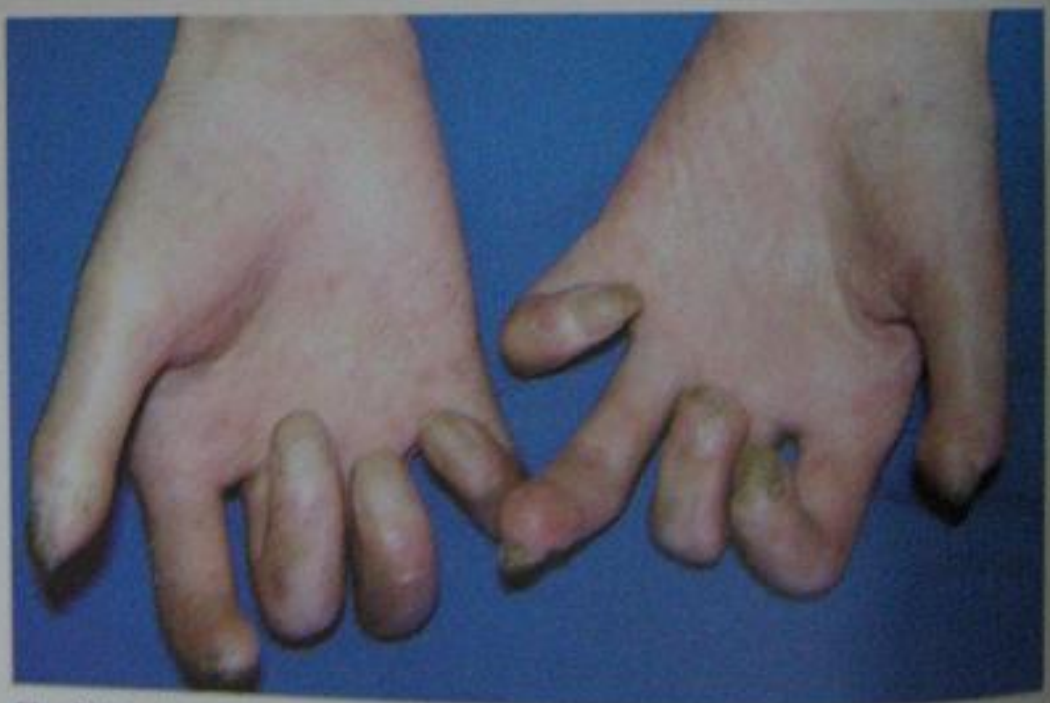


**Fig. 38.4 Scleroderma**. The typical changes at the hands: smooth and shiny skin (due to sclerodactyly), pulp atrophy and vasculitic lesions. Due to the advanced stage of sclerodactyly, the patient is unable to straighten up the fingers, which lie curled up with fixed flexion deformities.

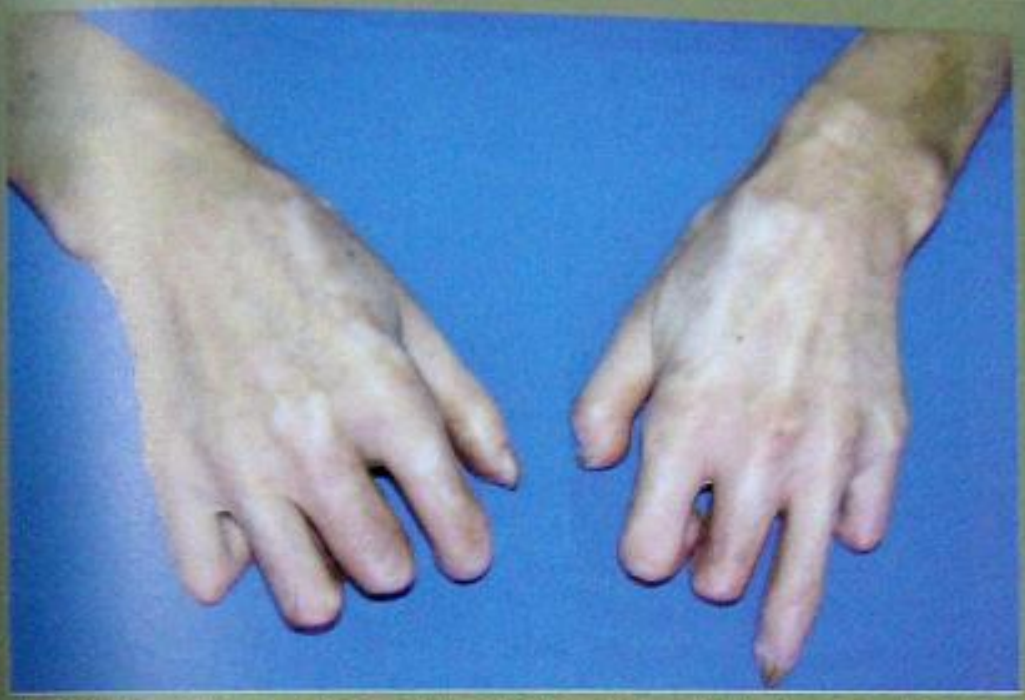


Fig. 38.5 Scleroderma. The smooth and shiny skin, with hypopigmentation.

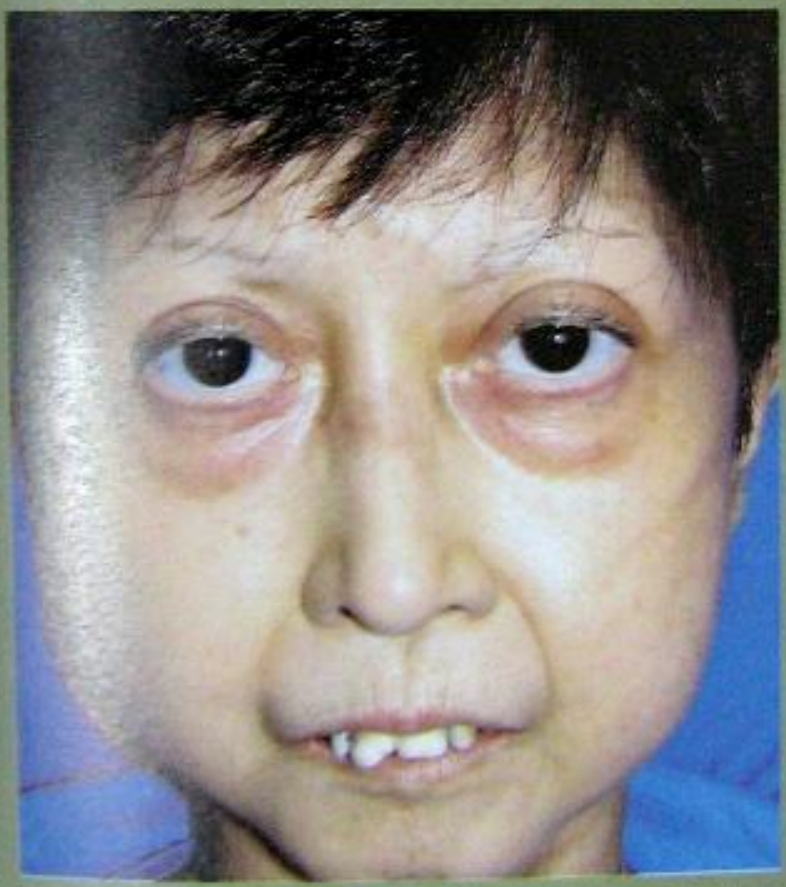


Fig. 38.6 Scleroderma. The typical facies: smooth and shiny skin, beaked-shaped nose, microstomia and radial furrowing around the mouth.

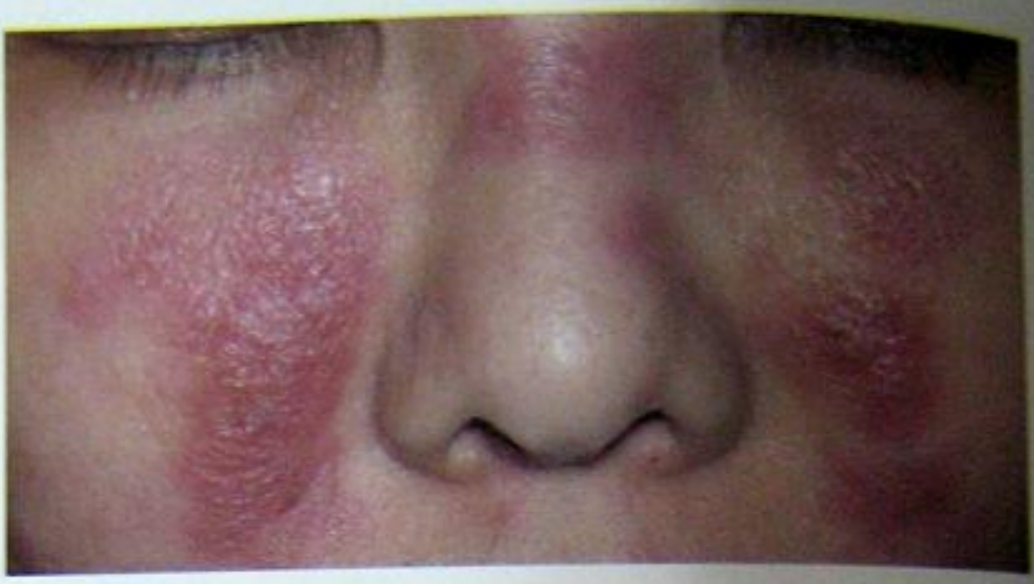


**Fig. 39 Systemic lupus erythematosus**. The malar rash which is red in color and distributed over the "butterfly" area (cheeks and nose of bridge). Compare with the facial rash of dermatomyositis (Fig. 37.4).

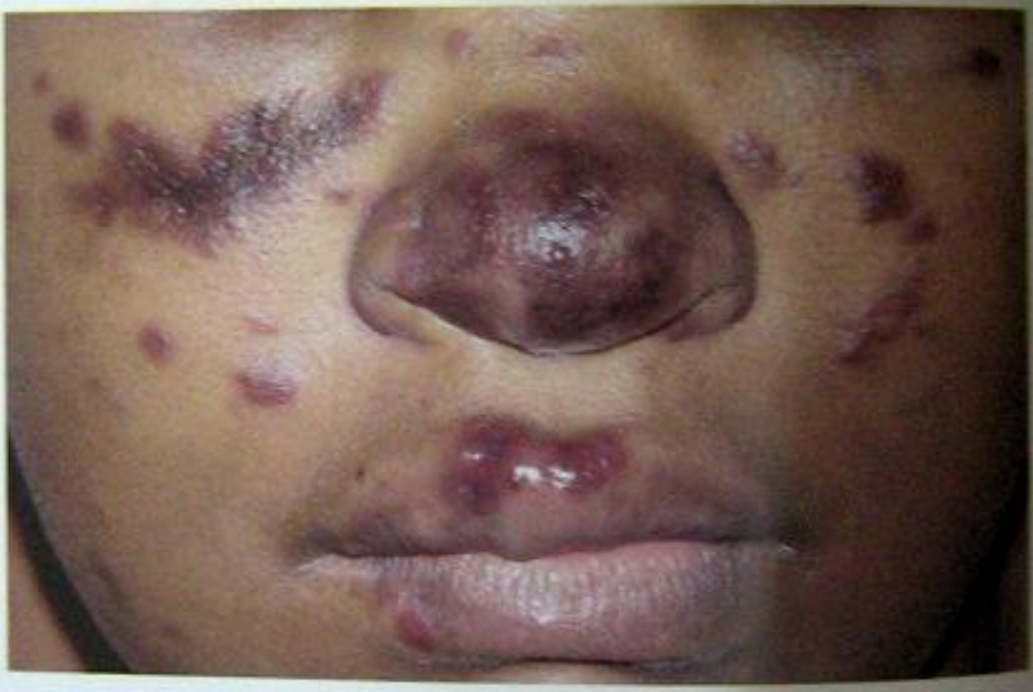


**Fig. 46.1 Kaposi's sarcoma.** The purplish red macules and papules on the face. She also has similar lesions at the oral cavity, trunk, limbs and esophagus.

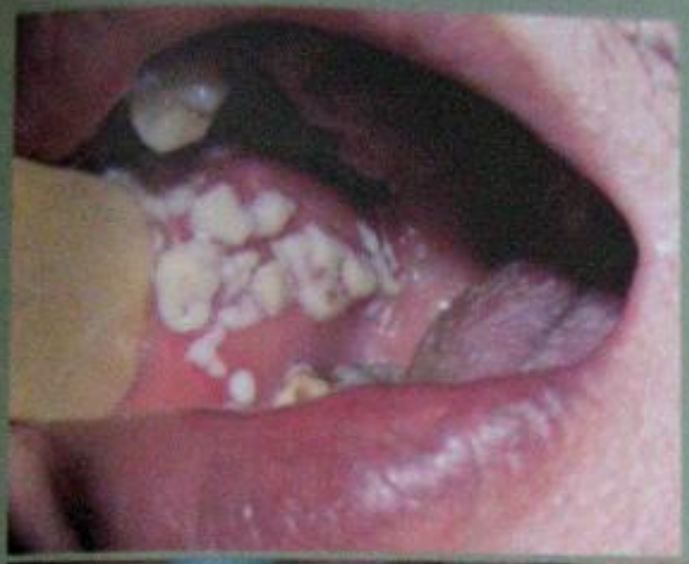


**Fig. 46.2 Oral Candidiasis in AIDS.** The white patches are located on the buccal mucosa and dorsum of tongue, and are removable using a spatula (c.f. oral hairy leukoplakia - see below).

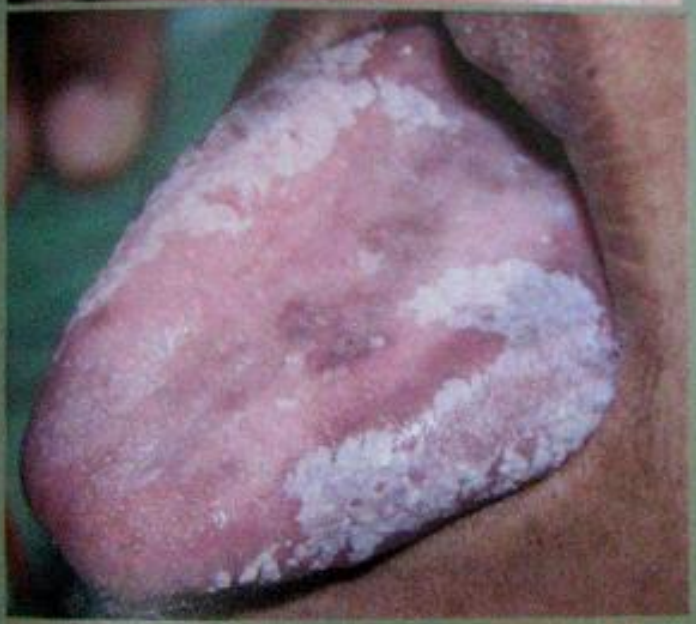


**Fig. 46.5 Oral hairy leukoplakia in AIDS.** The white patches are located on the lateral aspect of the tongue and irremovable using a spatula.

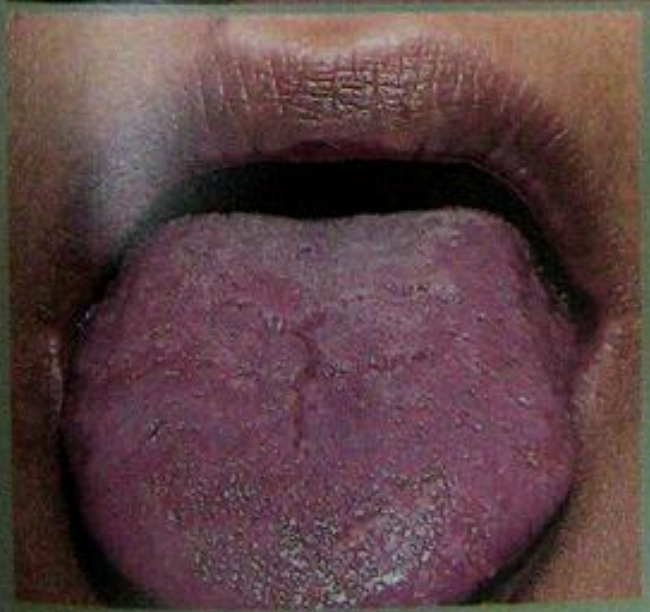


**Fig. 47.1 Eisenmenger's syndrome.** Central cyanosis and reddish tongue (secondary polycythemia). This 32-year-old lady was undergoing plasma exchange for hyperviscosity symptoms (Hb 23.8 g / dl) such as dizziness and headache.

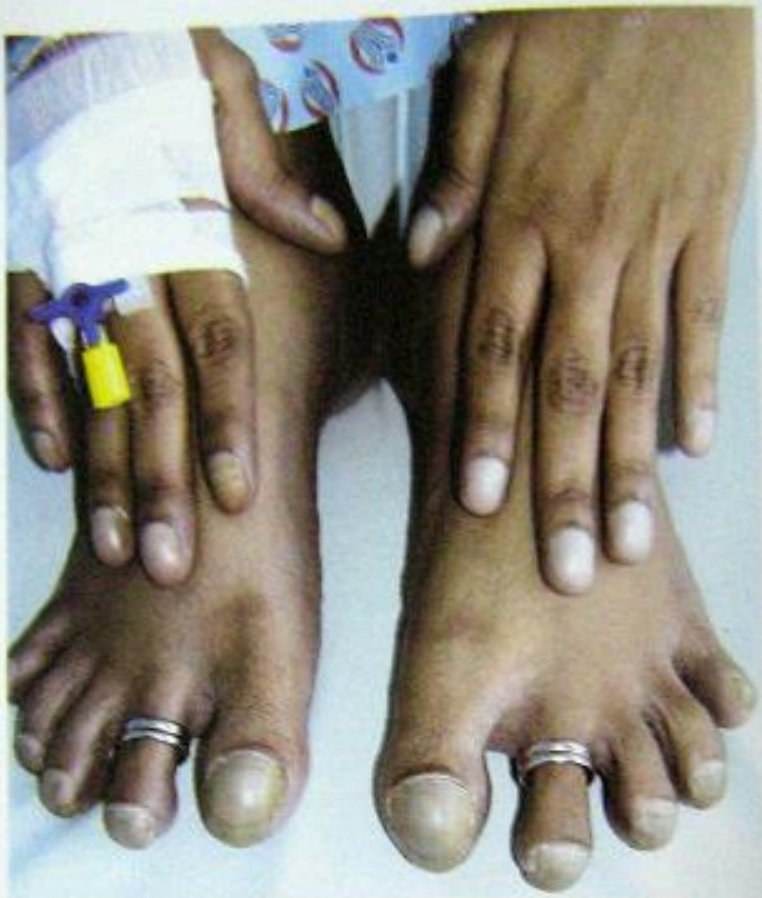


**Fig. 47.2 Eisenmenger's syndrome.** Digital clubbing and peripheral cyanosis.

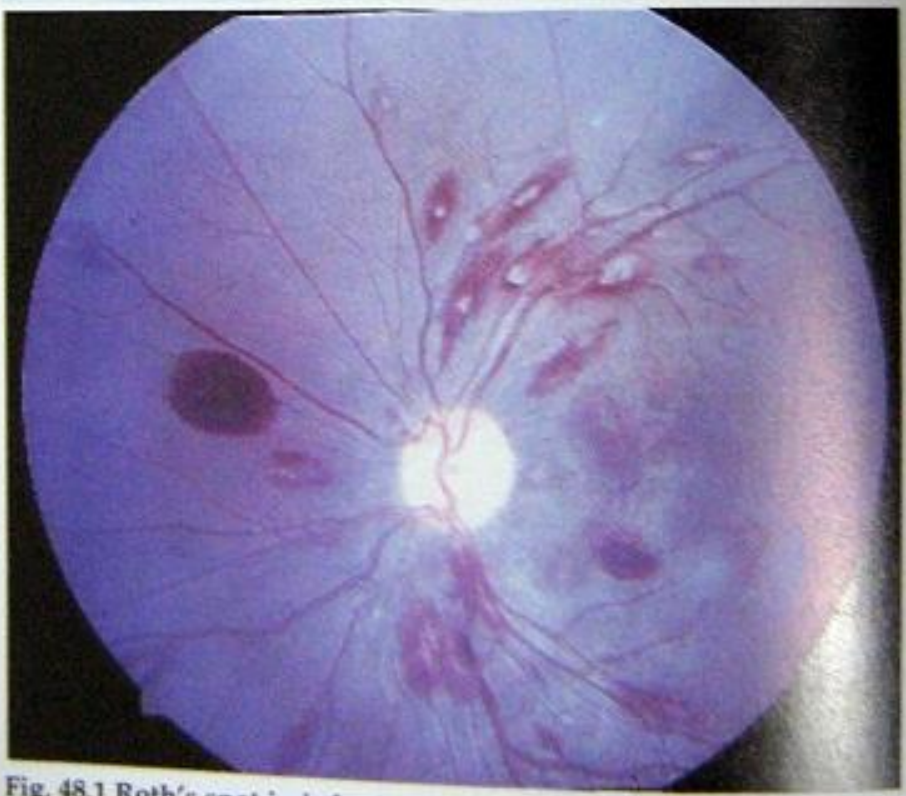


**Fig. 48.1 Roth's spot in infective endocarditis.** This patient presented with pyrexia of unknown origin.

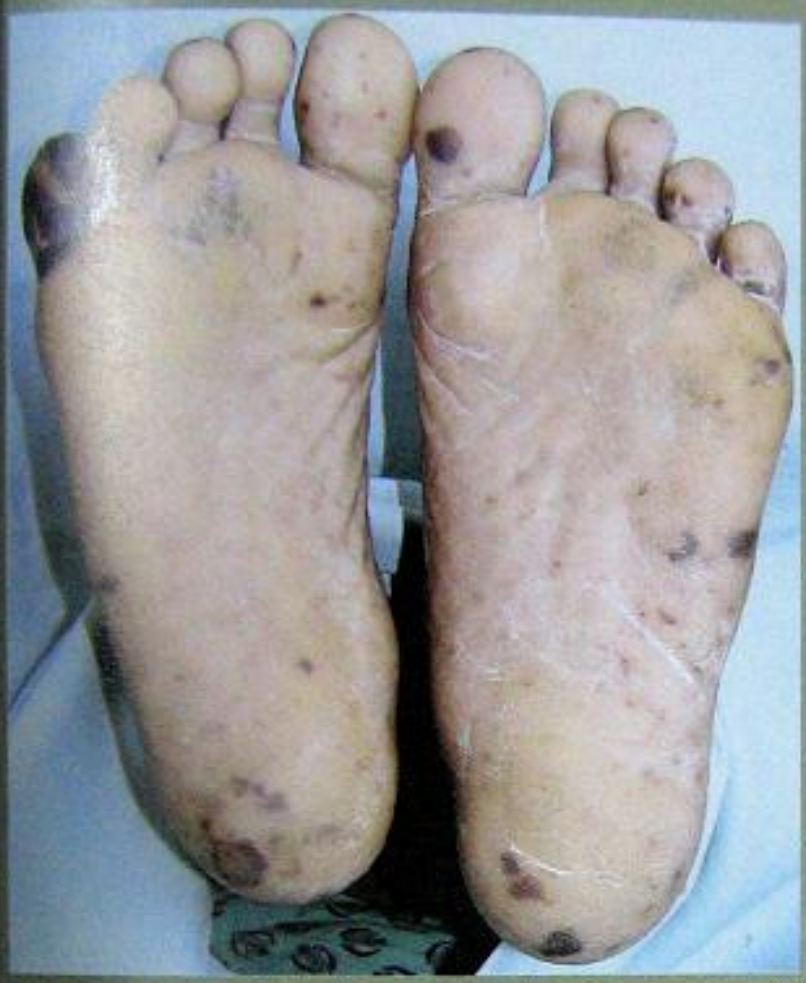


**Fig. 48.2 Infective endocarditis.** Janeway lesions at the soles and digital gangrene (due to septic emboli).

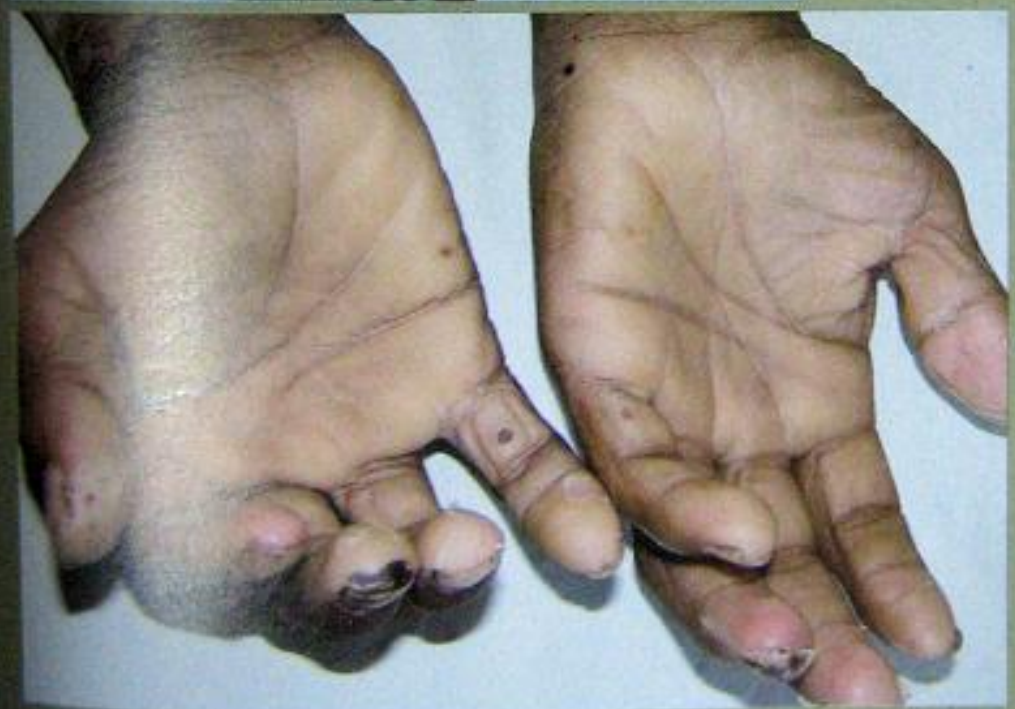


**Fig. 48.3 Infective endocarditis.** Janeway lesions on the palms.

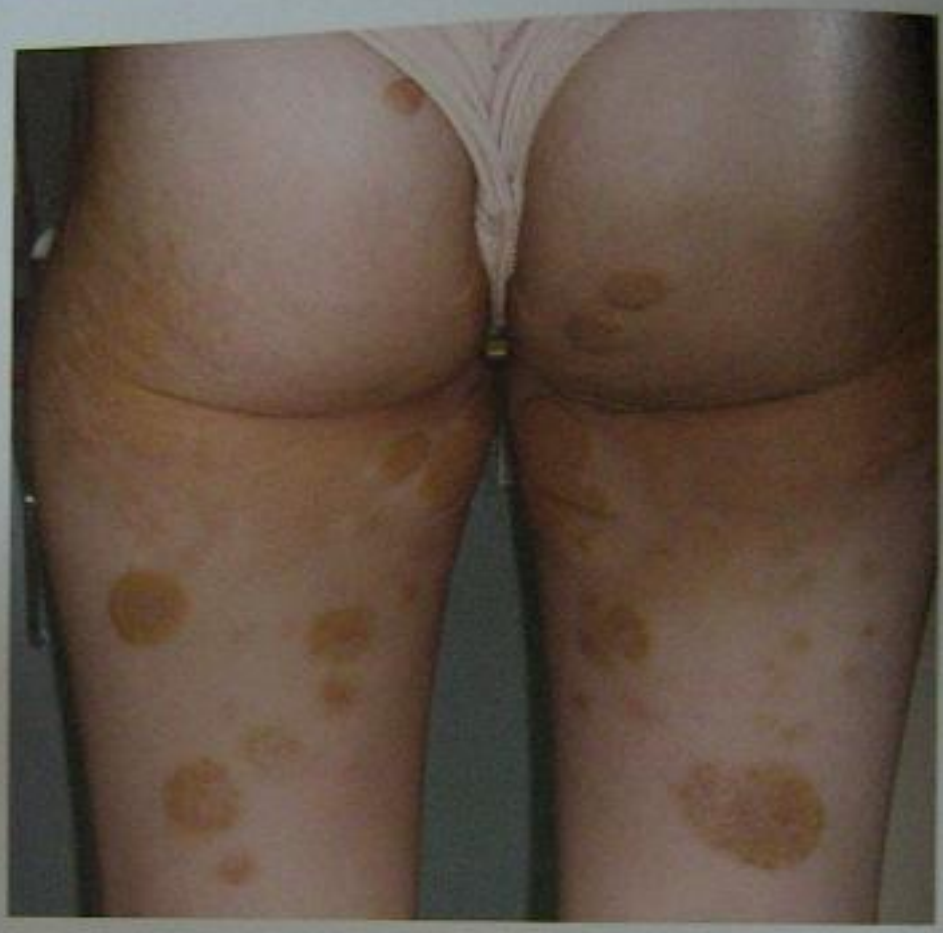


**Fig. 52.1 Familial hypercholesterolemia.** It is not always possible to specify the exact type of xanthomas. This patient's xanthomas appear as orange-yellowish macular lesions on the buttocks and posterior part of the thighs. These are not eruptive xanthomas (hypertriglyceridemia), which typically appear as crops of yellowish, pruritic papules over the buttock (and also the knees and elbows).

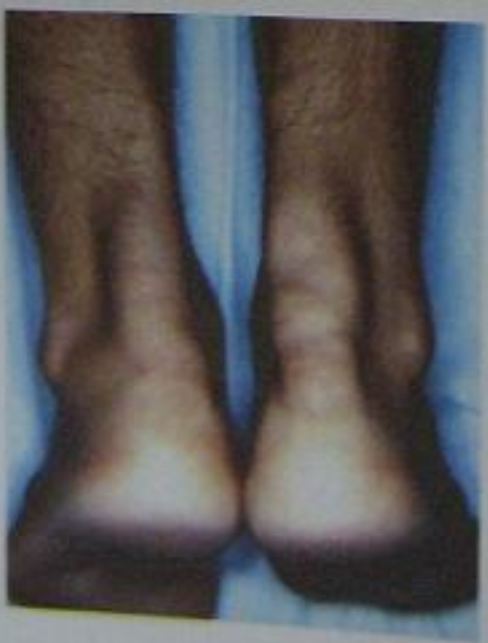


**Fig. 52.2 Familial hypercholesterolemia.** Tendinous xanthomas, which are fixed to the underlying tendons, are usually seen at the Achilles tendon and extensor tendons of the elbow, knee, wrist and foot.

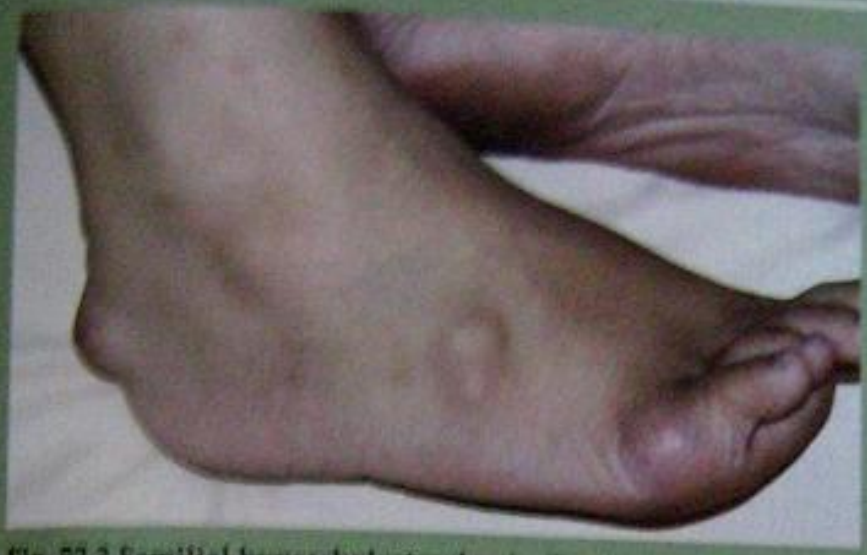


**Fig. 52.3 Familial hypercholesterolemia**. Tendinous xanthomas at the Achilles tendon, dorsum of foot and toes.

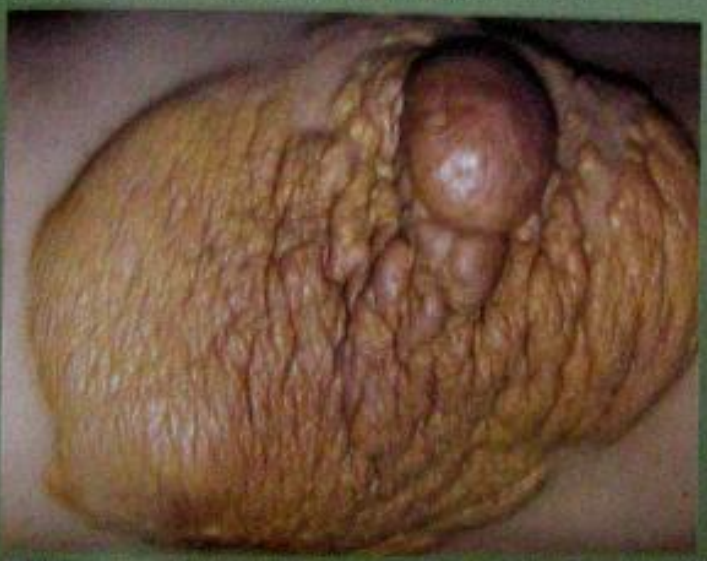


**Fig. 52.4 Familial hypercholesterolemia.** Tuberous xanthomas (extensor aspect of elbow) - consist of firm, yellowish papules or nodules which can coalesce to form multilobated tumors. The typical sites are pressure areas such as extensor aspect of elbows, knees and buttocks.

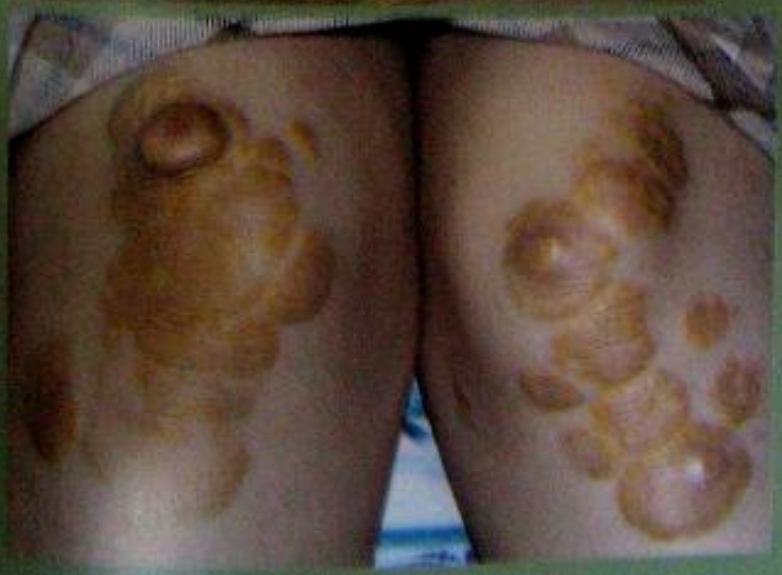


**Fig. 52.5 Familial hypercholesterolemia**. Tuberous xanthomas at the extensor aspect of the knees.

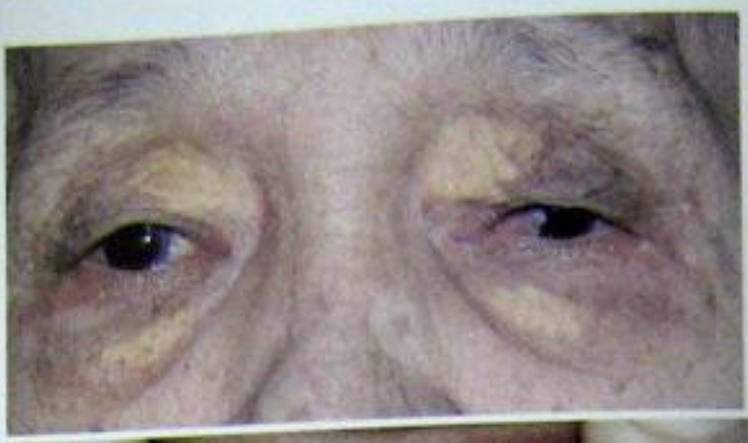


**Fig. 52.6 Familial hypercholesterolemia.** The xanthelasmas are flat, yellowish papules seen over the eyelids and medial canthus.

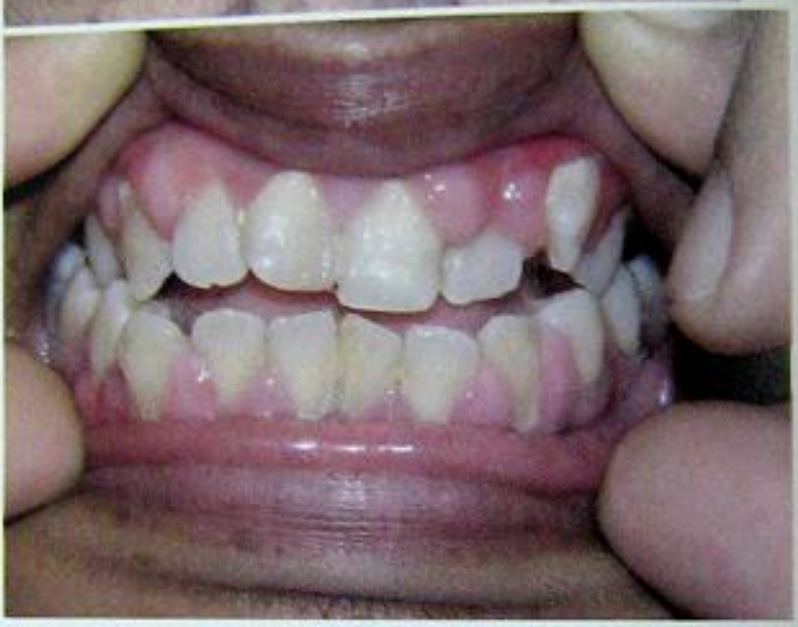
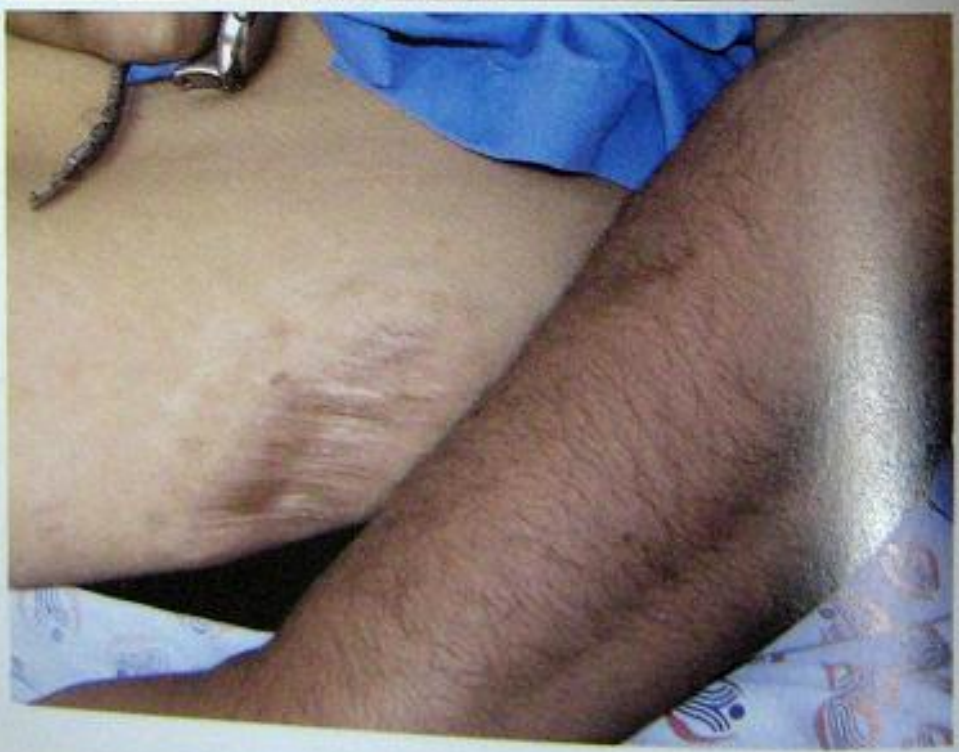


**Fig. 55 Renal transplantation with Cyclosporin therapy.** *Top:* Gum hypertrophy. *Bottom:* Hypertrichosis and left iliac fossa renal transplantation scar.



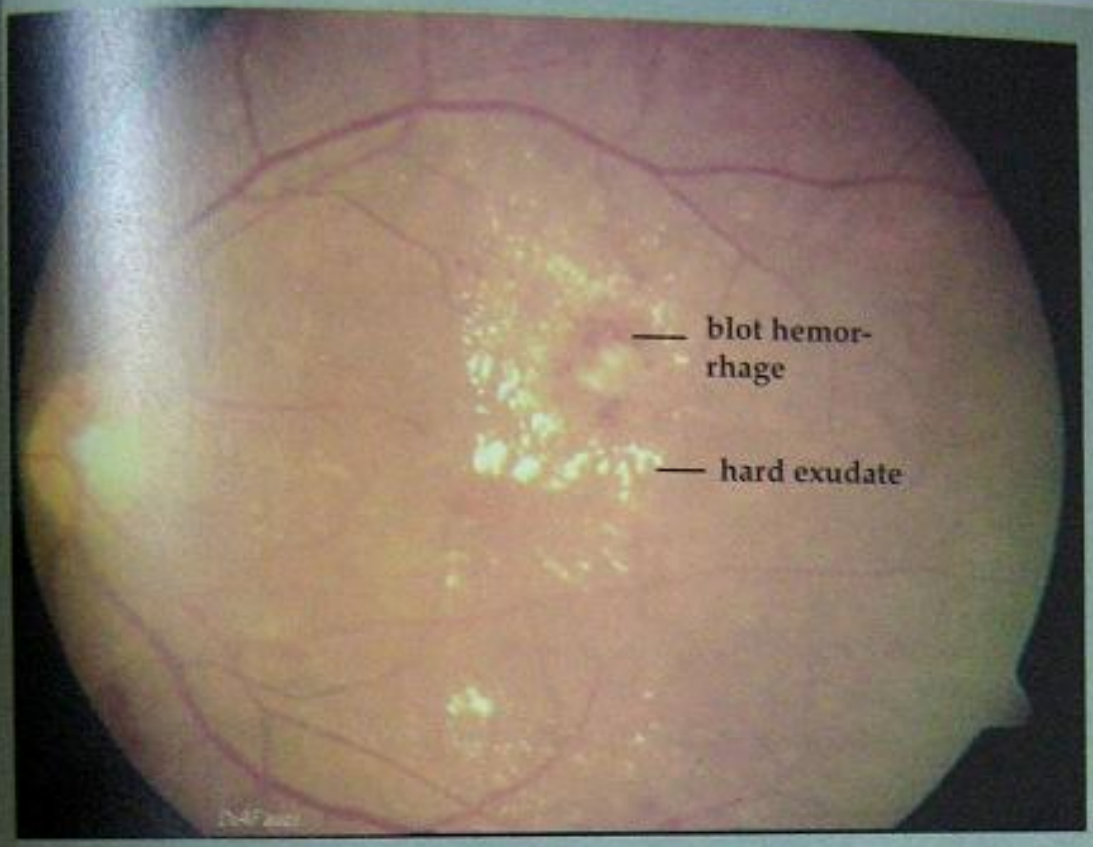



**Fig. 57.1 Diabetic retinopathy** (non-proliferative). The typical hard exudates and blot hemorrhages are seen mainly at the macula.

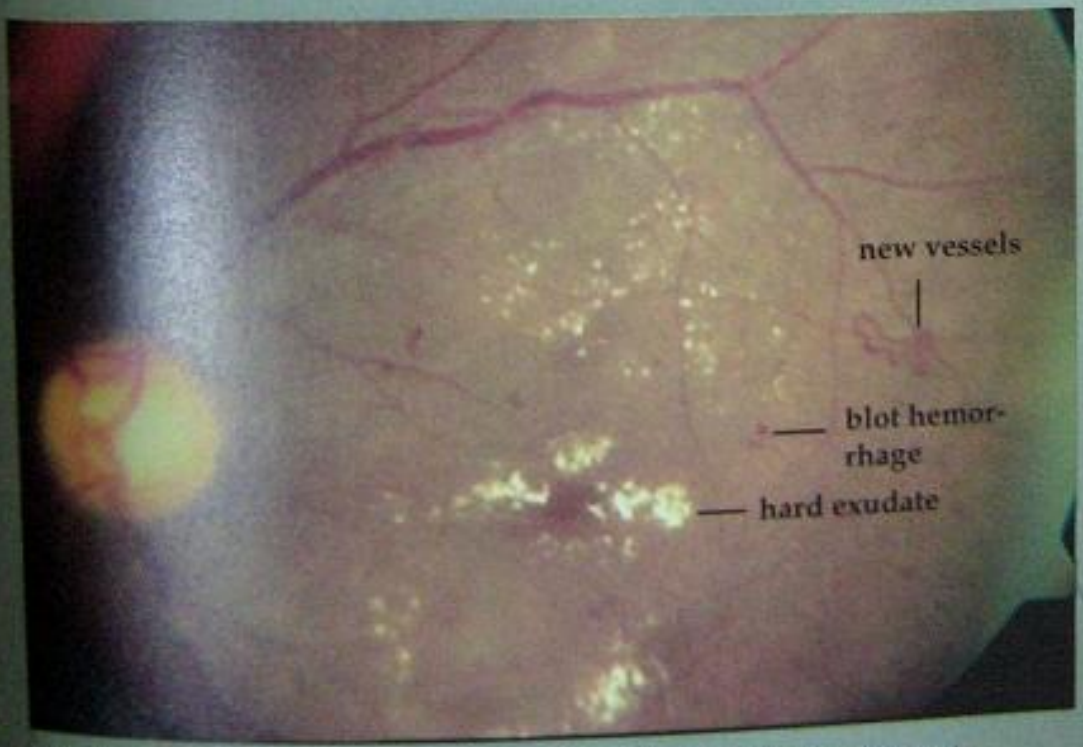



**Fig. 57.2 Diabetic retinopathy** (proliferative). The new vessels are prone to rupture, leading to retinal hemorrhage.

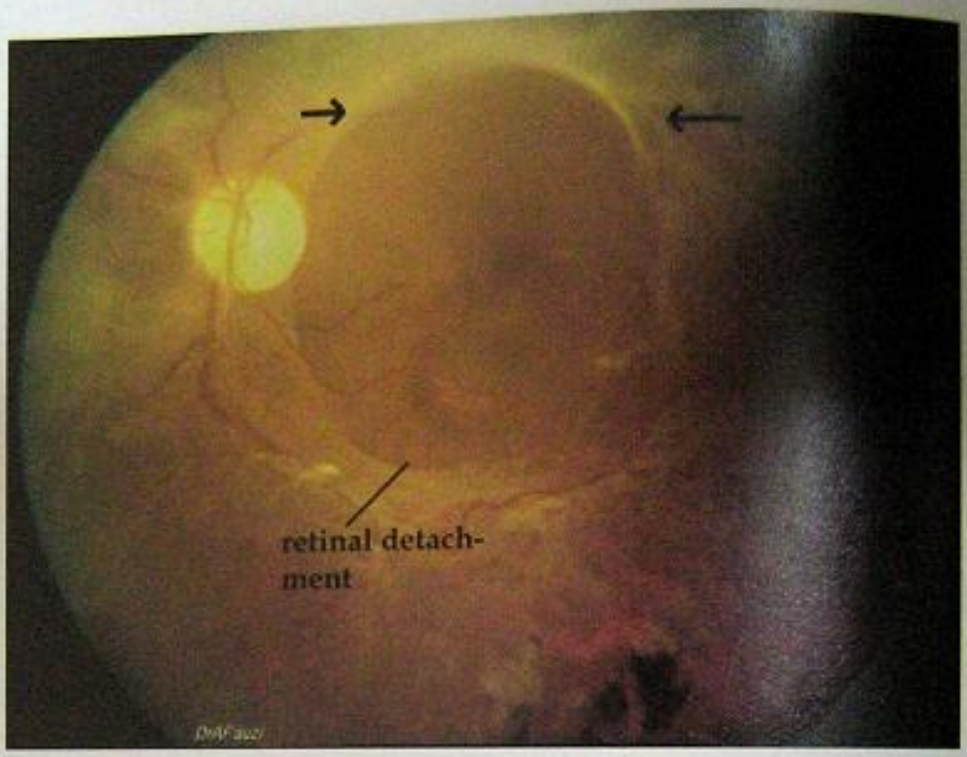



**Fig. 57.3 Diabetic retinopathy** (advanced stage). Marked fibrosis with traction exerted on the retina (black arrows). The area of retinal detachment appears as an opalescent sheet which balloons forward into the vitreous.

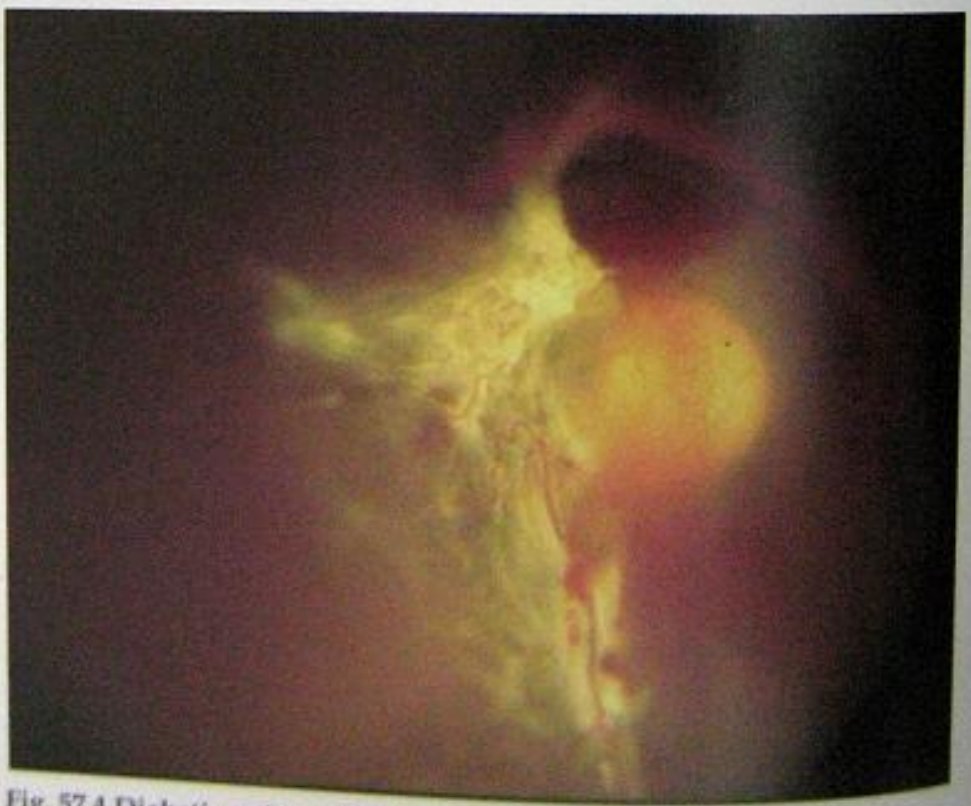


**Fig. 57.4 Diabetic retinopathy** (advanced stage). Vitreous hemorrhage.

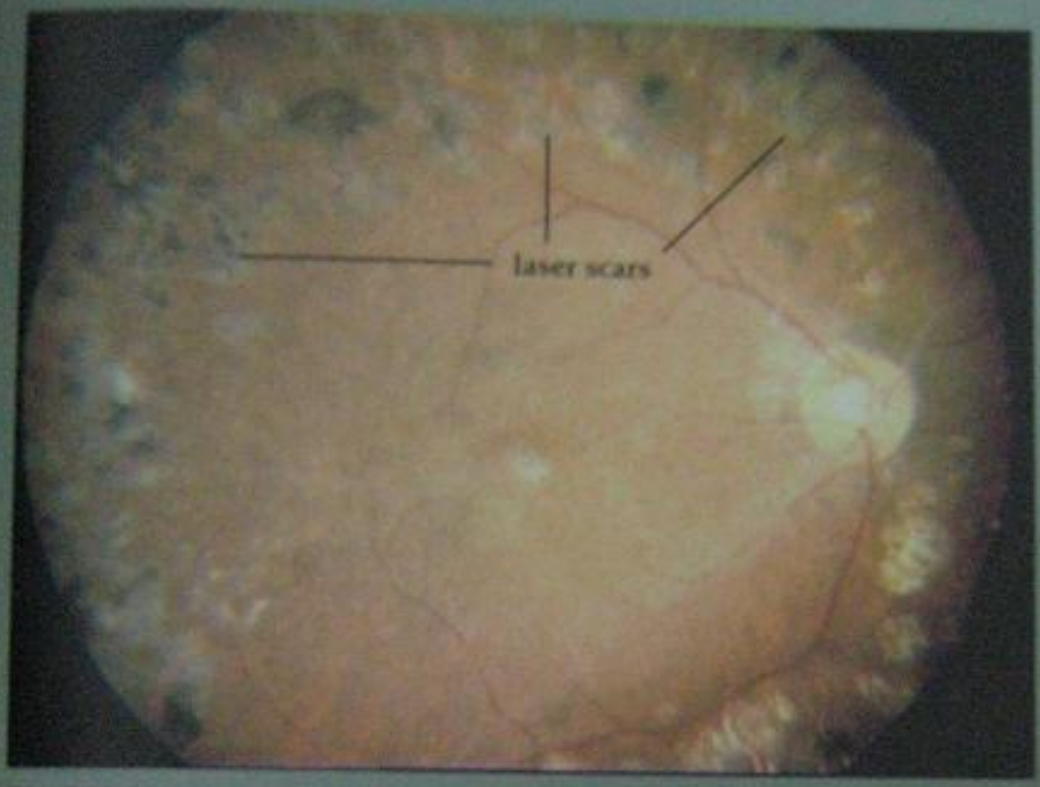



**Fig. 57.5 Photocoagulation scars** (diabetic retinopathy). These are hyper- or hypopigmented, peripherally situated rounded or oval lesions.

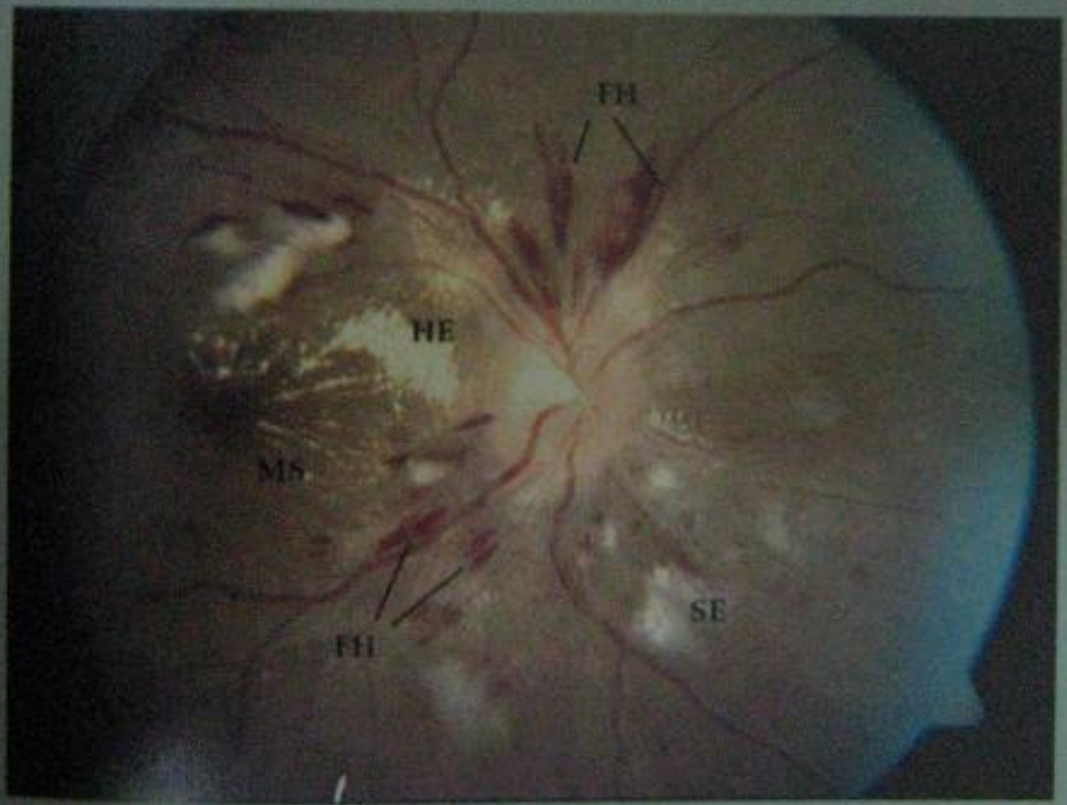



**Fig. 58** **...ensive retinopathy** (Grade 4). Papilledema and generalized arteriol... striction. Flame-shaped hemorrhages = FH, soft exudates = SE, hard e... = HE, macular star = MS.

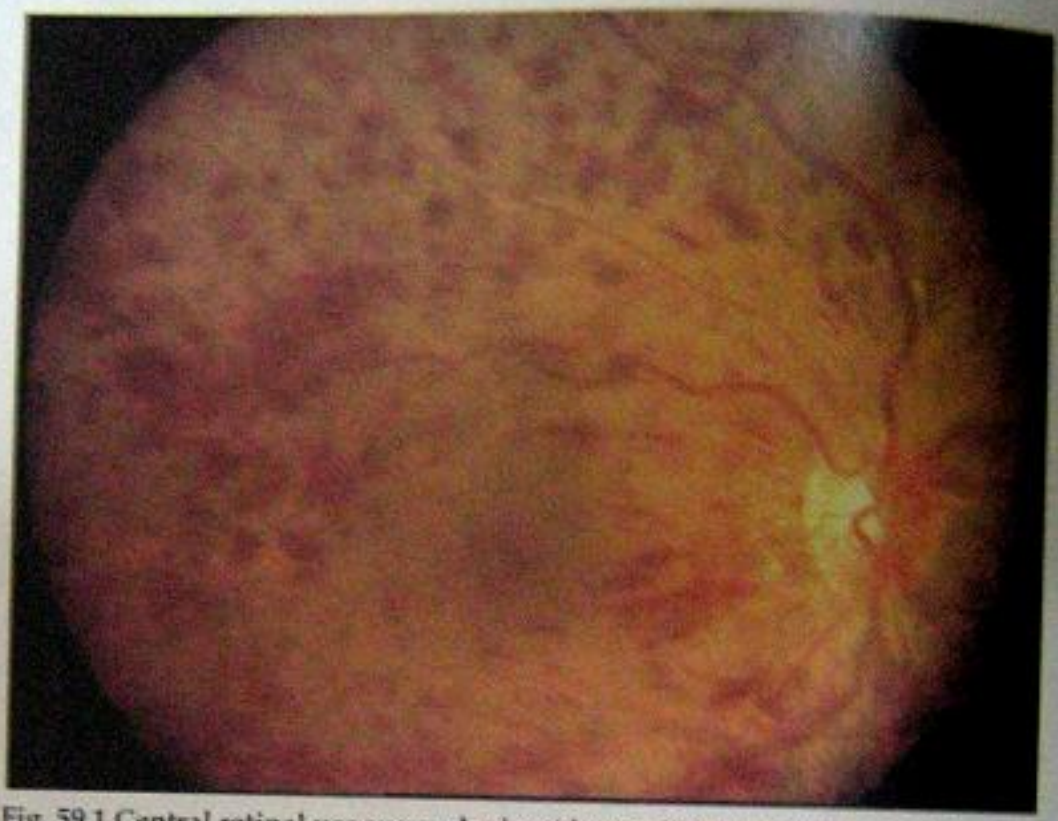


**Fig. 59.1 Central retinal venous occlusion** (due to diabetes mellitus and hypertension). The "battle-field" fundus (extensive retinal hemorrhages) with dilated and tortuous retinal veins. Also note the papilledema.

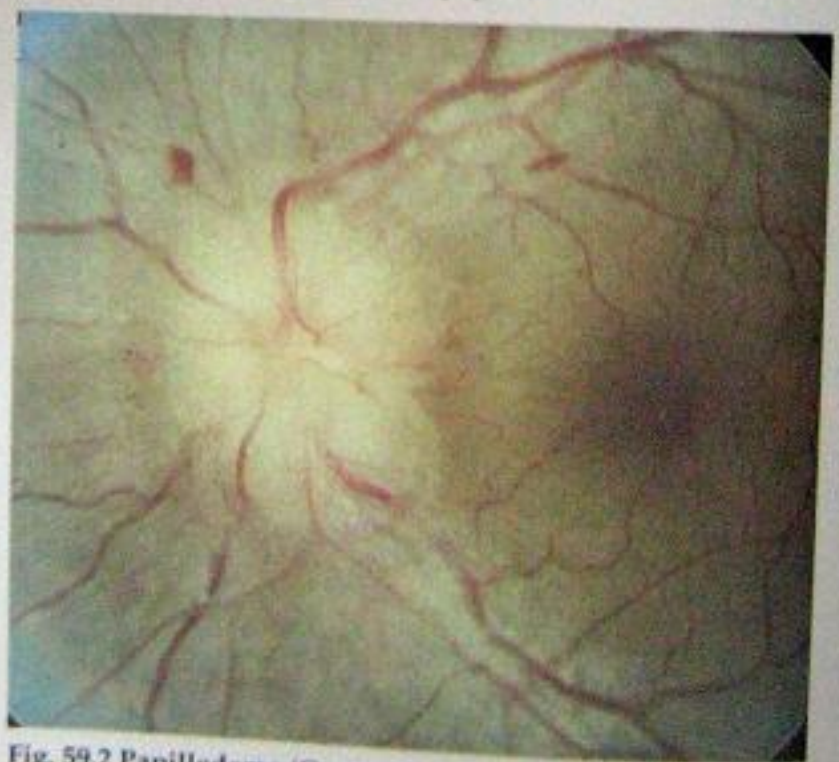


**Fig. 59.2 Papilledema** (Cryptococcal meningitis). The swollen optic head and blurring of the optic disc margin.

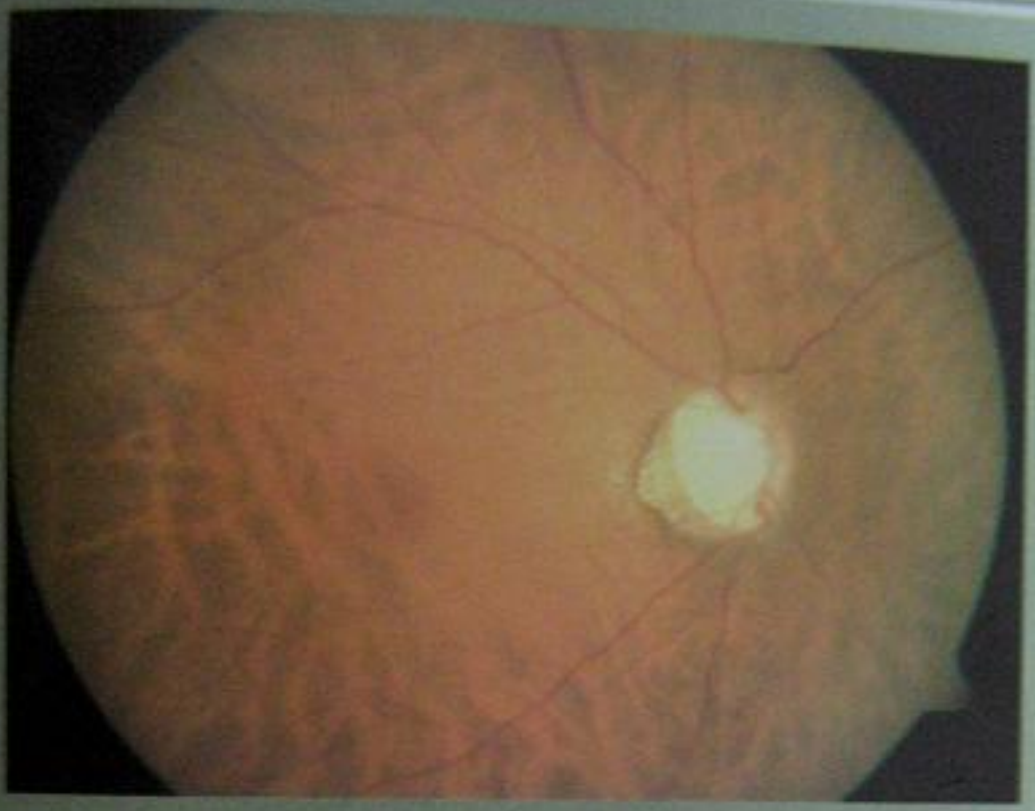


**Fig. 60.1 Optic atrophy** (Cryptococcal meningitis). Note the pale optic disc (the normal color is pinkish orange).

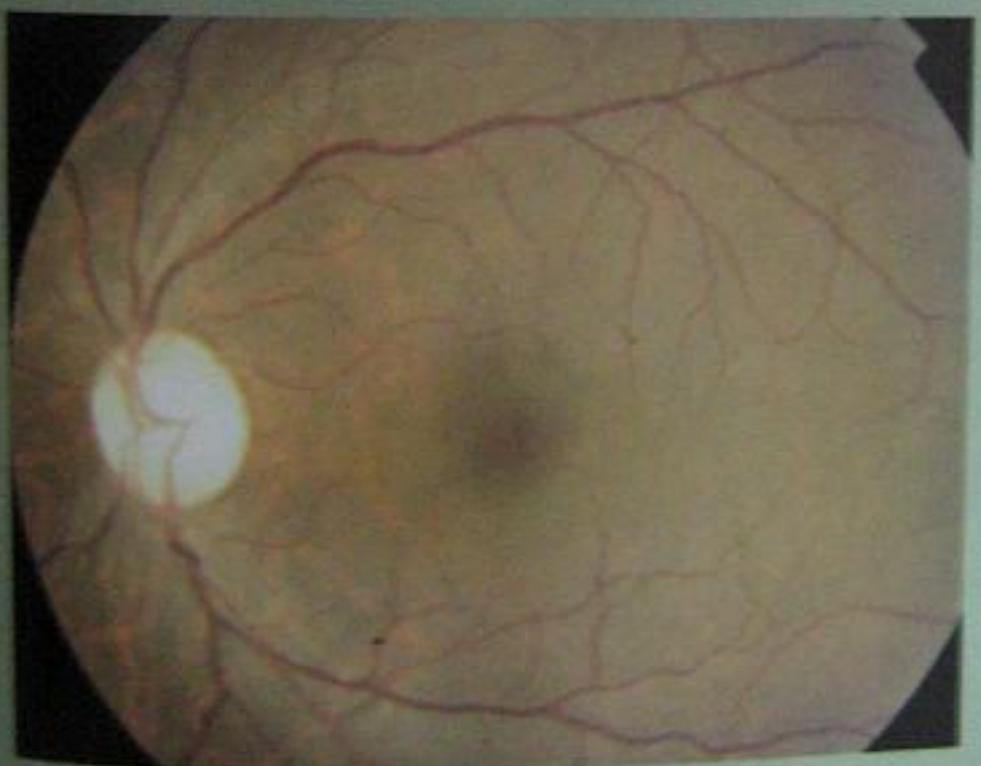


**Fig. 60.2 Optic atrophy** (recurrent optic neuritis due to multiple sclerosis). Note the markedly pale (almost white) optic disc.

# SECTION 3

# CHAPTER 4 – HEMATOLOGY

## CASE 24 BETA-THALASSEMIA (BT) MAJOR ★★★

- typically affects the Chinese.
- basic molecular defect - absent or reduced â chain production.
- one in four offsprings affected if both parents are BT carriers.

*Clinical categories of Thalassemias*

- *Thalassemia trait / minor* - asymptomatic, no or mild anemia.
- *Thalassemia intermedia* - moderate anemia and splenomegaly, relative independence from transfusions.
- *Thalassemia major* - severe anemia, transfusion-dependent.

*What are the mechanisms of anemia in BT major?*

- **ineffective erythropoiesis** - á chain precipitates in red cell precursors → *accelerated apoptosis* → intramedullary death of red cells.
- **hemolysis** - á chain inclusions reduce the deformability of mature red cells → interfere with their passage through splenic microcirculation → premature destruction.

*Diagnosis of BT major*

- peripheral blood film*
- absence of HbA, ↑ HbF (> 70%)
- BT trait in both parents

*Diagnosis of BT trait*

- peripheral blood film*
- ↑ $HbA_2$

*hypochromic microcytic anemia, target cells and basophilic stippling.

*Long term complications in BT major*

- Iron overload - endocrinopathies*, liver cirrhosis, cardiomyopathy, arthropathy
- Transfusion-related infection - HBV, HCV, HIV
- Growth retardation
- Osteoporosis**

**Fig. 24.1** 23-year-old BT major patient with his unaffected twin brother. Note the growth retardation and hyperpigmentation (iron overload).

*hypopituitarism, diabetes mellitus, hypothyroidism and hypoparathyroidism.

**due to bone marrow expansion, endocrine disorders and desferrioxamine.

*Iron overload in BT major*

- etiologies - repeated blood transfusions and increased gastrointestinal iron absorption.
- major cause of morbidity and mortality (cardiac events are the primary cause of death).

*Assessing the complications in BT major*

a) virus infection - HBV, HCV and HIV

b) iron overload:

*i) iron stores* - serum iron / ferritin, hepatic iron quantification (biopsy).

*ii) end-organ damage* - Echocardiogram, liver function tests / biopsy, blood glucose, pituitary / hormonal test.

*Management of BT major*

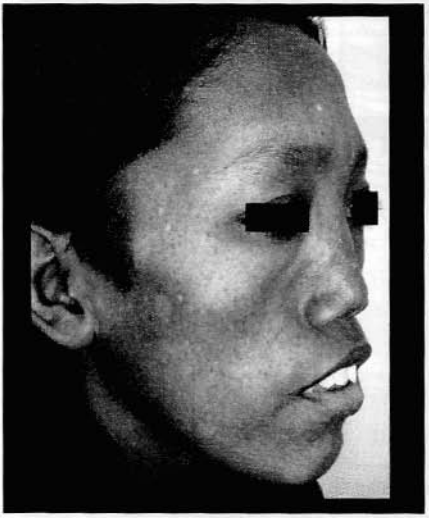
- transfuse to keep Hb 9-10 g/dl.
- iron chelation therapy - desferrioxamine.
- bone marrow transplantation - curative.
- hormone replacement - monitor **growth and sexual maturation** (fertility).

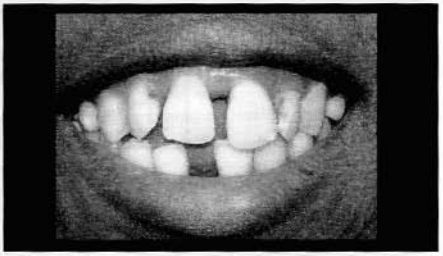
*VIP!*

**Iron overload (heart, liver, endocrine gland)** is the most important complication of BT major



## CASE REPORT





This 23-year-old diabetic lady (Fig. 24.2 - Section 2, Fig. 24.3) has primary amenorrhea and absent axillary / pubic hair. ↓ levels of FSH, LH and estradiol. **Diagnosis**: *BT major with hypogonadotrophic hypogonadism and Type 1 diabetes mellitus (iron overload).*

**Fig. 24.3** *Left*: Frontal bossing and prominent maxilla. *Right*: Inter-dental separation and malocclusion of the teeth due to bony expansion.

**Comments**: The facial and skull deformities ("Mongoloid" facies) are attributed to bone marrow expansion (caused by increased erythropoiesis).

Whatever you do, or dream you can, begin it, boldness has genius, power, and magic in it - Johann Wolfgang van Goethe

# BETA-THALASSEMIA MAJOR

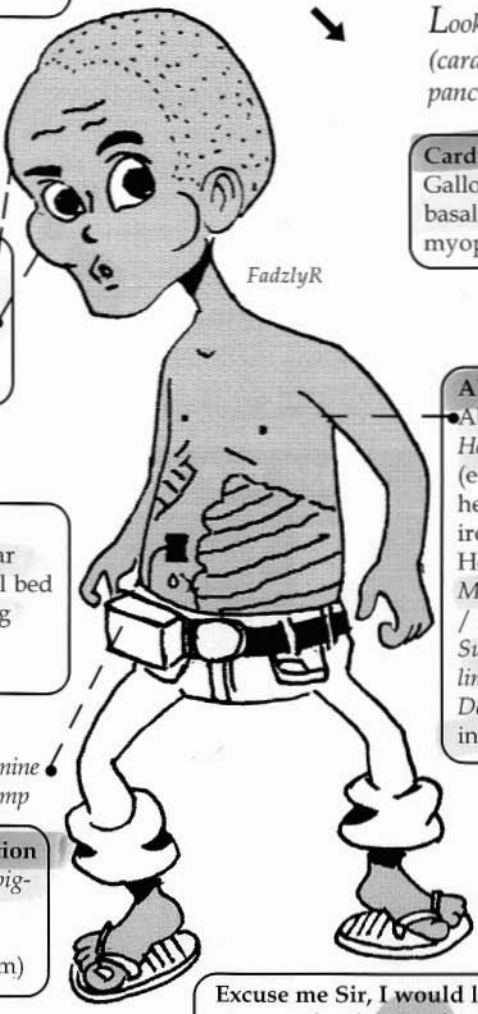
**Face**
Pallor of conjunctiva
Jaundice (hemolysis, chronic liver disease)

"This young CHINESE man came for blood transfusion - examine his abdomen"

*Look for complications (cardiac, liver, pituitary, pancreas)!*

**Cardiovascular**
Gallop rhythm, lung basal crackles (cardiomyopathy)

**Face**
*Frontal bossing*
*Malar eminence*
*(Mongoloid facies)*




**Abdomen**
Absent axillary hair
*Hepatomegaly* (extramedullary hematopoeisis*, iron overload, Hepatitis B / C)
*Massive splenomegaly* / splenectomy scar
*Subcutaneous Insulin* mark
*Desferrioxamine* infusion pump

**Hands**
Pallor of palmar creases and nail bed
Finger clubbing (chronic liver disease)

*Desferrioxamine infusion pump*

**General inspection**
*Slate-gray hyperpigmentation*
*Short stature* (hypopituitarism)

**Excuse me Sir, I would like to complete my examination by checking the following:**
Testicular atrophy / absent pubic hair (hypogonadism)
Plasma glucose level
Family history of anemia

*increased erythropoietin synthesis stimulates the formation of extramedullary erythropoietic tissues in the liver, spleen and paravertebral area.

## CASE 25 LYMPHADENOPATHY ★★

- palpable enlargement of lymph nodes (LN) that occurs in response to regional or systemic diseases.

### *Points to consider in the diagnosis*

*a) characteristics of LN*

i) location
- local - inflammatory or malignant diseases in the associated lymphatic drainage area.
- generalized - indicates the presence of systemic disease.

ii) tenderness - infection.
iii) hard LN, fixed and matted together - malignancy.

*b) age*

- infectious mononucleosis - young adults.
- Hodgkin's lymphoma - bimodal peak (20-30 years, after 50 years).

*c) associated history*

- fever, night sweat, weight loss - lymphoma.
- contact with cats - Toxoplasmosis.
- high risk behavior - HIV infection.

> *VIP !*
>
> Common causes of enlarged LN - **lymphoma, metastases, TB**

### *What are the causes of lymphadenopathy?*

*Infection*
- bacterial - pyogenic, **tuberculosis**
- viral - infectious mononucleosis, HIV
- parasitic - Toxoplasmosis
- fungal - coccidioidomycosis

*Infiltration*
- benign - Sarcoidosis
- malignant - **lymphoma, metastases**

*Immune*
- connective tissue disease

*Drugs*
- phenytoin

*???.....Hhmm.....*



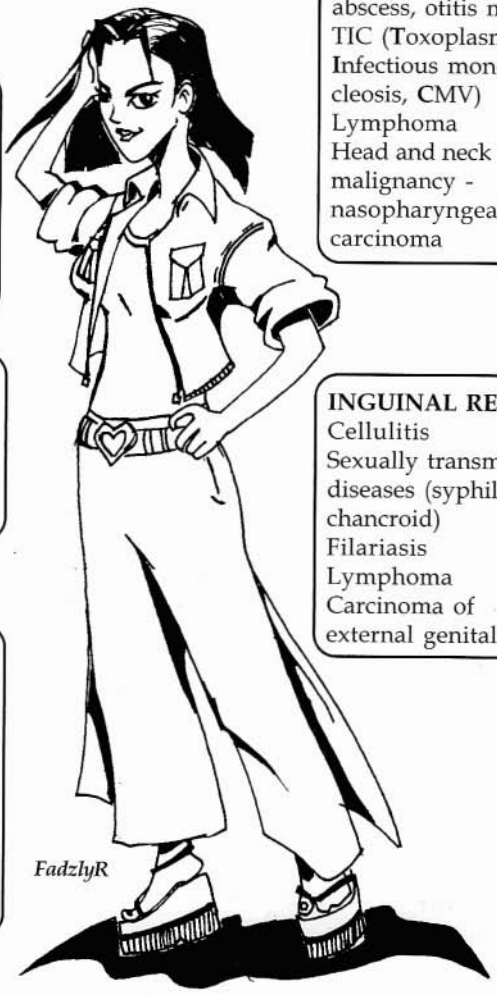
Honest disagreement is often a good sign of progress - Mahatma Gandhi

# APPROACH TO LYMPHADENOPATHY

"This patient has lymphadenopathy - examine her"

**CERVICAL REGION**
Pyogenic infection - pharyngitis, dental abscess, otitis media
TIC (**T**oxoplasmosis, **I**nfectious mononucleosis, **C**MV)
Lymphoma
Head and neck malignancy - nasopharyngeal carcinoma

**EPITROCHLEAR**
Lymphoma
CLL*
Infectious mononucleosis
Secondary syphilis
Intravenous drug use




**AXILLARY REGION**
Lymphoma
Breast carcinoma
Bacterial infections of arm (Staphylococcal, Streptococcal)

**INGUINAL REGION**
Cellulitis
Sexually transmitted diseases (syphilis, chancroid)
Filariasis
Lymphoma
Carcinoma of external genitalia

**GENERALIZED**
HIV
TIC (**T**oxoplasmosis, **I**nfectious mononucleosis, **C**MV)
Lymphoproliferative disorders**
Connective tissue disease
Phenytoin

*chronic lymphocytic leukemia.
**includes lymphoma, CLL and acute lymphocytic leukemia.

## CASE REPORT

This man had lethargy and neck swellings for two months. **Findings**: Pallor, generalized lymphadenopathy (Fig. 25.1), mild hepatomegaly and moderate splenomegaly. **Investigations**: Hb 9.6 g/dl, Chest Xray - bilateral mediastinal masses (Fig. 25.2), CT abdomen - retroperitoneal lymph node masses, inguinal lymph node biopsy - nodular sclerosing type of *Hodgkin's lymphoma.*

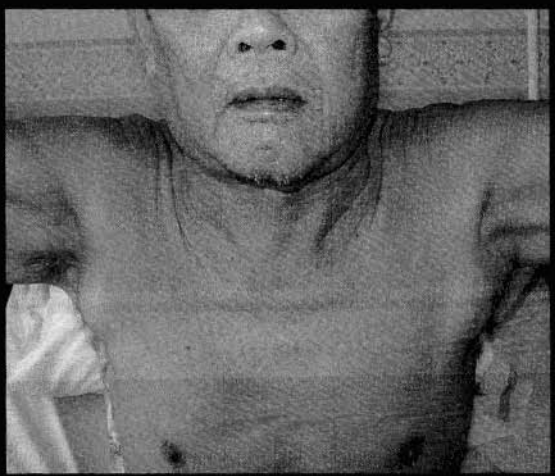


**Fig. 25.1** Hodgkin's lymphoma - bilateral cervical and axillary lymphadenopathy.

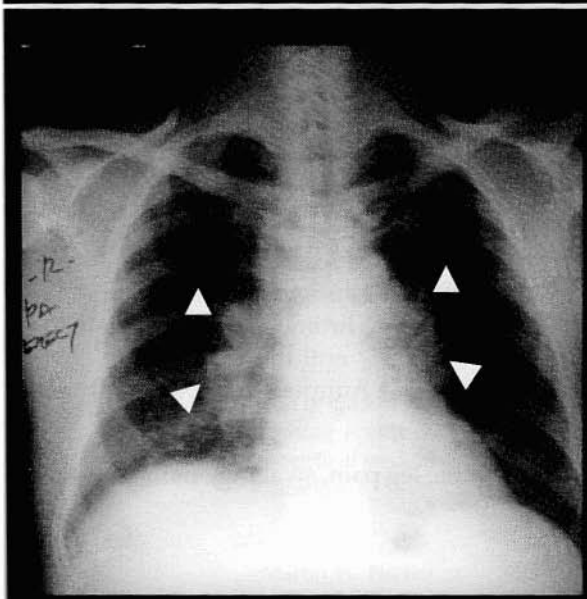


**Fig. 25.2** Hodgkin's lymphoma - bilateral mediastinal lymphadenopathy (white arrowheads).

# CASE 26 DEEP VEIN THROMBOSIS (DVT) ★★

*Clinical features of DVT*
- painful calf.
- swelling and tenderness of calf / thigh muscles.
- cyanosis.
- dilated superficial veins.
- increased warmth.

*VIP!*

Risk factors for DVT - **Virchow's triad**

*Differential diagnoses of DVT*
- cellulitis.
- ruptured Baker's cyst.
- ruptured plantaris tendon.
- calf hematoma - warfarin.

*Predisposing factors for DVT*
- **Virchow's triad** - venous thrombosis is facilitated by changes in the:
  - blood vessel wall - trauma
  - blood flow - stasis
  - blood constituents - hypercoagulability

*Confirming the diagnosis of DVT*
- D-dimer - a negative D-dimer test result excludes the diagnosis of DVT in patients with a low pretest probability of disease.
- Duplex ultrasonography - accurate for detecting proximal thrombus.
- Venography - gold standard investigation but rarely used because of the labour-intensiveness and patient discomfort.

**Note**: The pretest probability (likelihood) of the diagnosis of DVT is increased when there is presence of both typical signs of DVT and risk factors.

**TRAUMA**
- Surgery or fracture (hip, knee)

**STASIS**
- Cardiac failure
- Prolonged immobilization
- Pelvic obstruction

**HYPERCOAGULABILITY**
- Malignancy
- Surgery
- Myocardial infarct
- Estrogen / puerperium
- Thrombophilia (↓ protein C / S / anti-thrombin III)
- Antiphospholipid syndrome

*Complications of DVT*
- pulmonary embolism.
- post-thrombotic syndrome - chronic leg pain, swelling, venous stasis and ulcers.

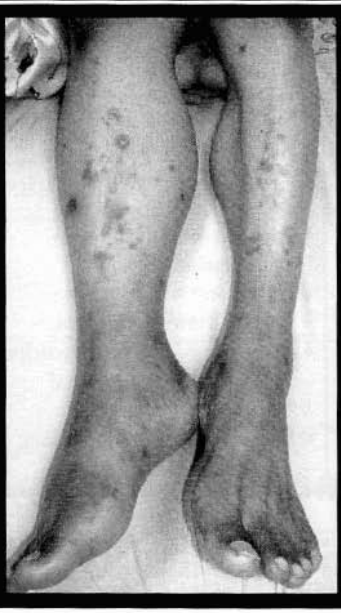
*Treatment of DVT*
- symptomatic - pain relief, elevation of foot, elastic stocking.

- prevention of pulmonary embolism, recurrence of DVT and post- thrombotic syndrome - anticoagulation with heparin followed by warfarin.

*Prevention of DVT*

- compression stockings.
- leg exercise and early ambulation after surgery.
- subcutaneous heparin.

## CASE REPORT



Three days after undergoing surgery for gastric carcinoma, this man developed chest pain and dyspnea. **Findings**: Right leg - warm and cyanosed (Fig. 26). **Investigations**: Duplex ultrasonography - thrombus in right popliteal, femoral and iliac veins, ECG - sinus tachycardia, Echocardiography - dilated right ventricle, CT thorax - clot in right pulmonary artery. **Diagnosis:** *Proximal DVT with pulmonary embolism (PE).*

**Comments**: The chances of PE are increased in patients with symptomatic DVT and proximal leg thrombus.

**Fig. 26**

*Students.....remember this,*

*In the sick room, ten cents' worth of human understanding equals ten dollars' worth of medical science.*

- Martin H. Fischer

## CASE 27 ANEMIA ★★★

- the following classification of anemia is useful in the diagnostic approach:

a) History and clinical signs ⇒ **hemolytic, blood loss and bone marrow failure**
b) Initial laboratory investigations ⇒ **microcytic, normocytic and macrocytic anemia**

*VIP!*

The etiology of anemia is often **multifactorial**

### *Pathophysiology of anemia*

**ANEMIA**

**HEMOLYTIC**
*Intracorpuscular*
- Hereditary spherocytosis (HS)
- Thalassemia
- PNH*

*Extracorpuscular*
- Autoimmune - SLE**
- Physical agents - prosthetic heart valve
- Chemical agents - drugs
- Infections - malaria, sepsis

**BLOOD LOSS**
- Acute
- Chronic (resulting in iron deficiency)

**BONE MARROW FAILURE**
- Lack of essential nutrients - vitamin B12, folate, iron
- Infiltration - leukemia, metastases, fibrosis
- Inhibition - drugs, inflammatory process
- Endocrine - hypothyroidism, hypopituitarism, renal failure
- Hereditary - Thalassemia, sideroblastic anemia

*paroxysmal nocturnal hemoglobinuria.
**systemic lupus erythematosus.

### *Initial laboratory investigation of anemia*

- Hb, red cell / reticulocyte count, MCV, MCH, MCHC, peripheral blood film.

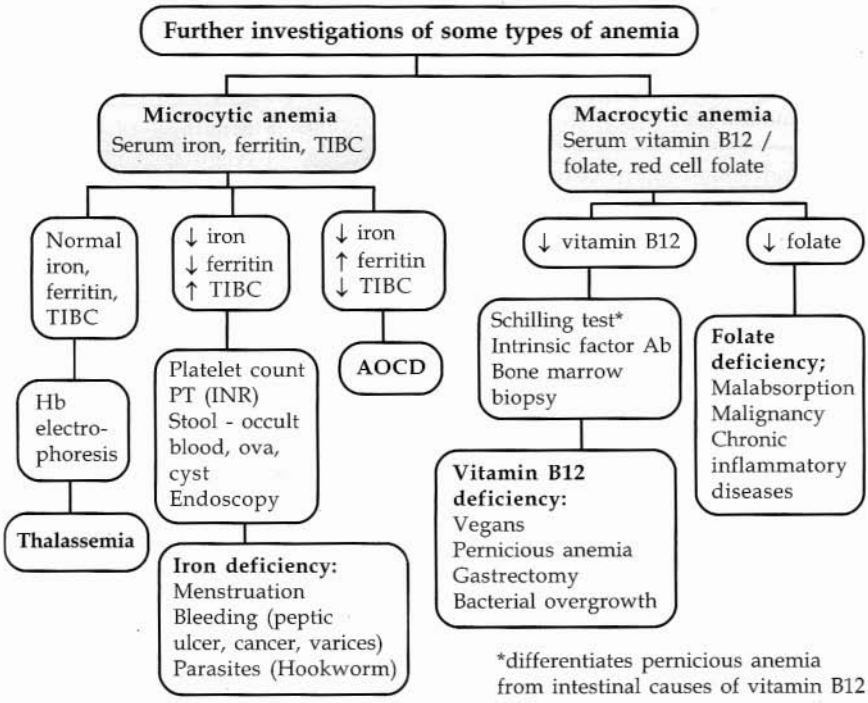
**MCV**

**Microcytic anemia** *"TICS"*
- Thalassemia
- Iron deficiency
- Chronic disease (AOCD*)
- Sideroblastic anemia

**Normocytic anemia**
- Hemolytic anemia
- Bone marrow failure
- AOCD*

**Macrocytic anemia**
- Vitamin B12 deficiency
- Folate deficiency
- Drugs - cytotoxic
- Alcoholism
- Reticulocytosis

*anemia of chronic disease.






## CASE REPORTS

**PATIENT 1** Alcoholic man with lethargy for three months. **Findings:** Anemia, ***smooth tongue*** (Fig. 27.1 - Section 2) and signs of chronic liver disease. **Investigations**: Hb 6.9 g / dl, ↓ MCV, ↓ MCHC, ↓ serum ferritin / iron, ↑ TIBC, blood film - hypochromia, microcytosis, pencil cells. Endoscopy - esophageal varices. **Diagnosis**: *Iron deficiency anemia due to chronic intestinal bleeding (esophageal varices).*

**PATIENT 2** This man was found to have these oral lesions (Fig. 27.2 - Section 2) when he was investigated for hypochromic microcytic anemia. Endoscopy showed small bowel polyps. **Diagnosis**: *Peutz-Jeghers syndrome (PJS) with chronic intestinal bleeding.*

**Comments:** PJS is an autosomal dominant disorder characterized by mucocutaneous pigmentation (circumoral, hands, feet) and gastrointestinal polyposis. It can result in bleeding and intussusception.

I got the bill for my surgery. Now I know what those doctors were wearing masks for - James H. Boren

# ANEMIA

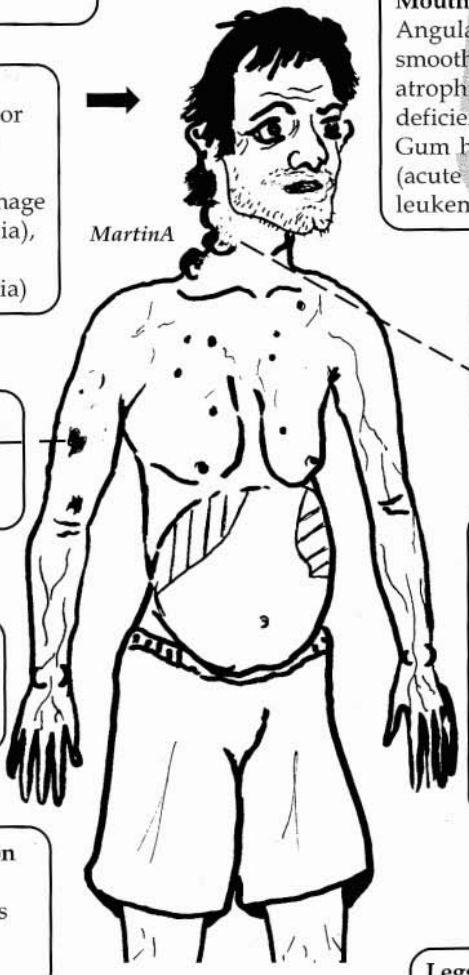
"This patient has anemia - examine him"

**1 Eyes**
Conjunctival pallor
Tinge of jaundice (hemolysis)
Fundus - hemorrhage (thrombocytopenia), optic atrophy (pernicious anemia)

**2 Hands**
Pallor of palmar crease
Koilonychia

**3 Forearms / arms**
*Bruising*
Epitrochlear lymph nodes

**4 General inspection**
Pallor
Thalassemic facies
Cachexia
(malignancy)




**5 Mouth**
Angular cheilitis, smooth tongue / atrophic glossitis (iron deficiency)
Gum hypertrophy (acute promyelocytic leukemia)

**6 Neck / axilla**
*Lymph nodes*

**7 Abdomen**
Surgical scar - gastrectomy, cholecystectomy (hereditary spherocytosis)
*Hepatosplenomegaly*
Inguinal lymph nodes

**8 Legs**
Areflexia, upgoing plantar, proprioceptive loss (pernicious anemia)

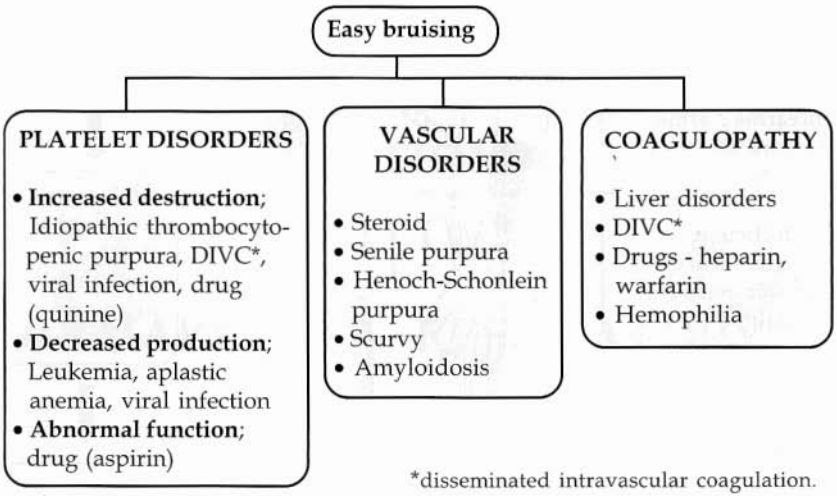
**9 Excuse me Sir, I would like to complete my examination by checking the following:**
Fever (neutropenic sepsis)
Family history of anemia
Stool occult blood
Hematuria (coagulopathy, thrombocytopenia)

# CASE 28 EASY BRUISING



- bruising (ecchymosis), petechia and purpura are various forms of subcutaneous bleeding that occur in hemorrhagic disorders.
  - **petechia** - punctate skin bleeding, about 1 mm in diameter, that occur in vascular or platelet abnormalities
  - **purpura** - skin bleeding of 1 mm-1 cm in diameter, that occur in vascular abnormality
  - **ecchymosis** - larger bleed with local extravasation that occur in platelet, vascular and coagulation disorders

*Causes of easy bruising*




*disseminated intravascular coagulation.

*Investigation of easy bruising*

| Test | Abnormality detected |
|---|---|
| Full blood count / blood film | Anemia, leukemia, DIVC |
| Platelet count | Thrombocytopenia |
| Activated partial thromboplastin time | Deficiency of all coagulation factors (e.g. factors VIII and IX) except factor VII; heparin |
| Prothrombin time | Deficiency of factors I, II, V, VII and X; warfarin |
| Thrombin time | Hypofibrinogenemia; heparin; fibrin degradation products |
| Bleeding time | Platelet-vessel wall interaction |



It isn't what you have, or who you are, or where you are, or what you are doing that makes you happy or unhappy. It is what you think about - Dale Carnegie

# EASY BRUISING

"This patient has multiple bruises - examine him"


**1 General inspection**
Cushingoid
Cachexia
(malignancy)

**2 Hands**
Pallor of palmar crease
Stigmata of chronic liver disease (clubbing)

**3 Forearms / arms**
*Purpura* at pressure areas (thrombocytopenia)
Perifollicular petechia (scurvy)
Palpable purpura (vasculitis)

**4 Face / eyes**
Alopecia (cytotoxic)
Conjunctival pallor
Periorbital purpura (amyloidosis)
Fundus - hemorrhage (thrombocytopenia)

**5 Mouth**
Palatal petechia
Oral ulcer
(neutropenia)

**6 Neck / axilla**
*Lymph nodes*

**7 Chest**
*Sternotomy scar - warfarin*

**8 Abdomen**
*Hepatosplenomegaly* (leukemia)
Inguinal lymph nodes

**9 Buttock / Legs**
Purpura
(Henoch-Schonlein purpura)

**10 Excuse me Sir, I would like to complete my examination by checking the following:**
Drugs - steroid, anticoagulant
Stool occult blood (thrombocytopenia)
Hematuria (coagulopathy)
Family history of bruising (Hemophilia)

# SECTION 3

# CHAPTER 5 – RESPIRATORY

## RESPIRATORY EXAMINATION

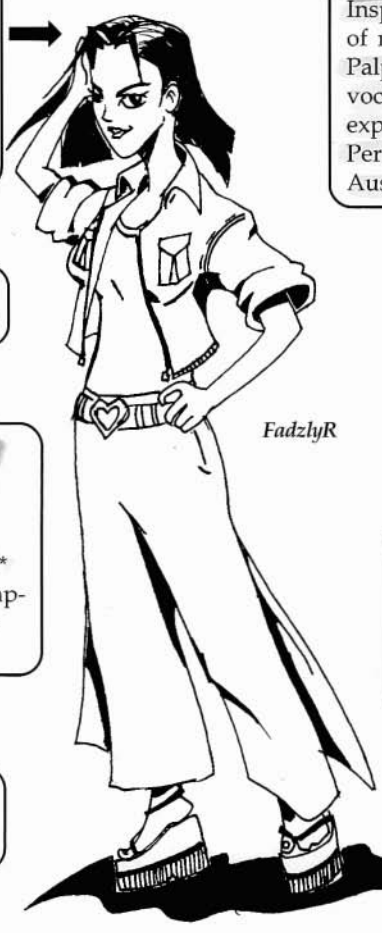
**1 Introduce yourself**
Shake the patient's hand

**2 Position**
Prop up the head of bed to 45 degrees

**3 Hands / forearm**
Clubbing, cyanosis
Nicotine staining
Mantoux test
Palpate radial pulse* (bounding - hypercapnia) while counting respiratory rate

**4 Neck**
JVP - use torchlight!

**5 Face**
Central cyanosis
Polycythemia
Oral cavity - dental hygiene, signs of HIV infection
Horner's syndrome




BCG scar!

**6 Chest (anterior)**
Inspection - asymmetry of movement**
Palpation - trachea, vocal fremitus, chest expansion, apex beat
Percussion
Auscultation - say "99"

**7 Neck**
Sit up, patient's back facing you - palpate for lymph node

**8 Chest (posterior)**
Inspection - pleural biopsy scar
Palpation
Percussion
Auscultation

**9 Legs**
Ankle edema (cor pulmonale)

**10 Excuse me Sir, I would like to complete my examination by checking the:**
Fever chart, sputum pot
Peak expiratory flow rate

*not necessary to count the radial pulse rate.
**ask patient to breath in and inspect the chest movement from the end of the bed.

## ♣ Presenting your diagnosis to the examiner

a) this gentleman has left lower zone consodilation (**ANATOMICAL DIAGNOSIS**) as evident by the following: ↓ chest movement, bronchial breathing, .... (bla..bla..bla...)
b) in view of the fever and purulent sputum, the most likely etiology **(PATHOLOGICAL DIAGNOSIS)** is *bacterial pneumonia*. Other etiologies are *bronchogenic carcinoma* and *pulmonary infarct*
c) he has moderately severe pneumonia **(CLINICAL SEVERITY)** as evident by the high-flow oxygen therapy

## Interpretation of physical findings

| Pathological process | Chest movement | Mediastinal shift | Percussion note | Breath sounds | Vocal resonance | Others |
|---|---|---|---|---|---|---|
| Consolidation | ↓ on affected side | None | Dull | Bronchial | ↑ | Crackles |
| Collapse | ↓ on affected side | Towards affected side | Dull | ↓ / absent | ↓ / absent | None |
| Pleural effusion | ↓ on affected side | Towards opposite side | Stony dullness | ↓ / absent | ↓ / absent | Pleural rub |
| Pneumothorax | ↓ on affected side | Towards opposite side | Normal or hyper-resonant | ↓ / absent | ↓ / absent | Absent |
| Bronchial asthma | Symmetrically ↓ | None | Normal | Normal / ↓ Vesicular with prolonged expiratory phase | Normal / ↓ | Rhonchi |
| Interstitial lung disease | Symmetrically ↓ | None | Normal | Normal | ↑ | Fine inspiratory crackles |

### Causes of lung collapse
- bronchogenic carcinoma
- tuberculosis
- bronchial adenoma

### Causes of lung consolidation
- bacterial pneumonia
- bronchogenic carcinoma
- pulmonary infarct

### Causes of bibasal crackles
*With finger clubbing*
- bronchiectasis (coarse crackles, sputum pot full of purulent sputum)
- interstitial lung disease (fine crackles, empty sputum pot)

*Without finger clubbing*
- left ventricular failure
- bronchopneumonia



The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires - William Arthur Ward

## CASE 29 ASTHMA ★★★

- a chronic *inflammatory* disorder of the airways characterized by *bronchial hyper-responsiveness* of the airway to various stimuli, leading to widespread *bronchoconstriction*. The obstruction is often *reversible*.

### *Diagnosis of asthma*

- typical symptoms / signs (family history, aggravating factors)
- lung function tests:
  - ≥ 20% diurnal variation in PEF on ≥ 3 days in a week for 2 weeks, or
  - **$FEV_1$ ≥ 15% increase after bronchodilator** or oral steroid, or
  - $FEV_1$ ≥ 15% decrease after six minutes of exercise (running)

### *Assessing the clinical severity of BA*

*Indicators of severe asthma*
- inability to complete a sentence in one breath
- respiratory rate ≥ 25 / min
- pulse rate ≥ 110 / min
- PEF < 50% of predicted or best value

*Indicators of life-threatening asthma*
- exhaustion, confusion, coma
- bradycardia, hypotension
- silent chest, cyanosis
- PEF < 33% of predicted or best value
- normal or ↑pCO2, pO2 < 60 mm Hg

*VIPs!*

- assessment of severity of asthma is **MANDATORY**
- wheezing and pulsus paradoxus are not reliable indicators of severity

**Note**: Pulsus paradoxus is not a reliable indicator of severe asthma because it correlates poorly with peak flow reading. The generation of pulsus paradoxus requires deep inspiratory effort, which may be absent in patients with severe muscle fatigue. Wheezing can be absent in severe obstruction of airways.

### *Management of acute asthma*
- arterial blood gases.
- chest Xray (to exclude pneumothorax).
- oxygen, nebuliser - beta-agonist.
- high-dose steroid (intravenous hydrocortisone, prednisolone).
- for severe attack - intravenous aminophylline, consider ventilation.

# CASE 30 CHRONIC OBSTRUCTIVE AIRWAY DISEASE (COAD)

★★★

- COAD is defined* as a disease state characterized by *airflow limitation*** *that is not fully reversible*. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases.

**GOLD* (**G**lobal Initiative for Chronic **O**bstructive **L**ung **D**isease). The old definitions i.e. *chronic bronchitis* and *emphysema* are no longer widely used nowadays.
**slowing of expiratory airflow as measured by spirometry.

## *Diagnosis of COAD*

- **key indicators of COAD**
  - chronic cough with sputum production
  - progressive or persistent dyspnea
  - history of smoking
  - exposure to occupational dusts or chemicals
- **spirometry** (to confirm the diagnosis of COAD)
  - airflow limitation ($FEV_1$ / FVC < 70%) that is not fully reversible (postbronchodilator $FEV_1$ < 80% of predicted value)

*VIP!*

Finger clubbing* in COAD → superimposed **bronchogenic carcinoma, chronic infection**

*finger clubbing is **NOT** a feature of COAD.

## *Additional investigation of COAD*

- bronchodilator reversibility testing:
  - **largely irreversible** in COAD and **largely reversible** in asthma.
- glucocorticoid reversibility testing - > 15% ↑ in $FEV_1$ after a course of steroid therapy.
- chest Xray - hyperinflation, bullous changes, pulmonary hypertension.
- ECG - cor pulmonale (peaked P wave at L2, 3 and AVF).
- arterial blood gases.
- alpha-1-antitrypsin deficiency (AATD)* screening - indicated in young patients (< 45 years) or those with strong family history of COAD.

## *Management of acute exacerbation of COAD*

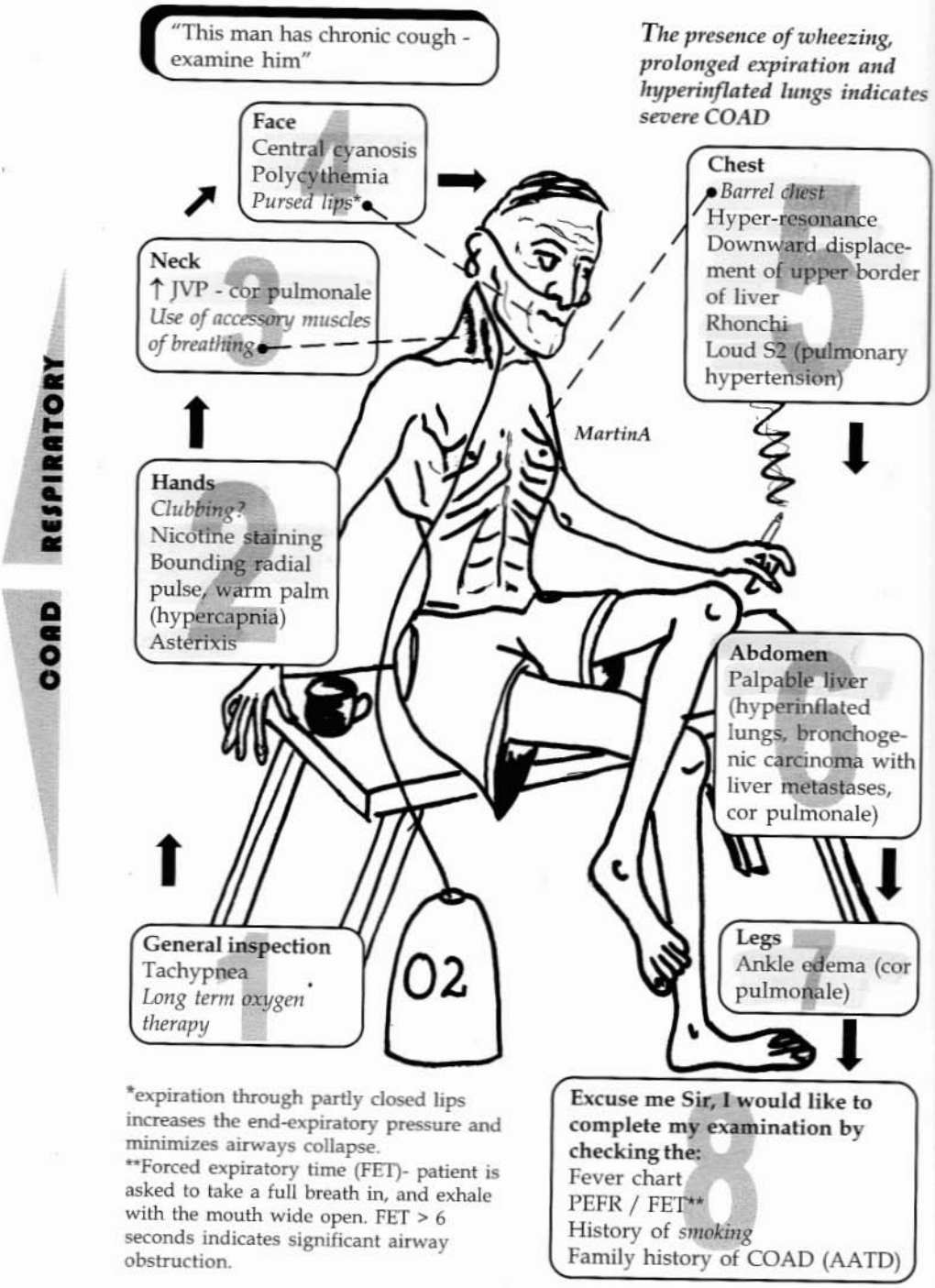
- nebulized bronchodilators, oxygen.
- chest Xray - to exclude pneumothorax.
- antibiotics (*H. influenzae, Str. pneumoniae).*
- steroids (oral or intravenous) - beneficial in acute exacerbation of COAD.

*VIP!* Differential diagnoses of COAD - **left ventricular failure and chronic asthma**

*the only known genetic factor for developing COAD. AAT is a protease inhibitor that blocks the neutrophil elastase in the lungs.

Every situation, properly perceived, becomes an opportunity - Helen Schucman

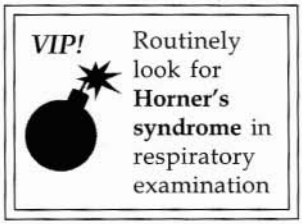
# COAD




*expiration through partly closed lips increases the end-expiratory pressure and minimizes airways collapse.
**Forced expiratory time (FET)- patient is asked to take a full breath in, and exhale with the mouth wide open. FET > 6 seconds indicates significant airway obstruction.

# CASE 31 BRONCHOGENIC CARCINOMA (BC) ★★

*Histological types of BC*
- squamous cell carcinoma (sqcc): 30-40%.
- adenocarcinoma (adc): 30-40%.
- small cell carcinoma (scc): 20%.
- large cell carcinoma (lcc): 5%.




*Some clinical features of BC*
- **primary tumor** - Pancoast syndrome (PS)*
- **mediastinal spread** - hoarseness (recurrent laryngeal nerve palsy), superior vena cava obstruction (SVCO)
- **metastases** - pleura, liver, brain, adrenal
- **paraneoplastic syndromes** (PNS)**:

a) endocrine - ectopic ACTH secretion (scc), gynecomastia (adc), syndrome of inappropriate ADH secretion / SIADH (scc), hypercalcemia (sqcc)
b) neurological - cerebellar syndrome, poly- / dermatomyositis, LEMS×
c) others - hypertrophic pulmonary osteoarthropathy (HPOA), clubbing

*apical lung tumor with invasion of lower trunk (C8-T1) of brachial plexus (wasting of small muscles of the hand), sympathetic chain (Horner's syndrome) and 2nd- 3rd ribs.
**symptoms or signs due to damage to organs that are remote from the site of primary tumor or its metastases (mechanism - substances secreted by primary tumor).
×Lambert-Eaton Myasthenic syndrome - an autoimmune-mediated neuromuscular junction disorder caused by antibody directed to calcium channels in the presynaptic membrane. The muscle weakness predominantly affects the proximal muscles while the extraocular muscle weakness is absent or mild (c.f. Myasthenia gravis).

*Investigation of BC*
- serum sodium, calcium.
- chest Xray - hilar mass or coin lesion, rib erosions, raised hemidiaphragm (phrenic nerve paralysis), lymphangitis carcinomatosis.
- pleural fluid cytology.
- bronchoscopy (+ washing and brushing) - endobronchial tumor.
- CT scan thorax / abdomen, bone scan - staging of BC.
- lung function test - $FEV_1$.

*Specific treatment modalities for BC*
- palliative chemotherapy - for scc (limited benefit in non-scc).
- palliative radiotherapy - for pain, SVCO, Pancoast syndrome.
- surgical resection* - for peripheral non-scc.

*contraindicated in patients who have metastases, mediastinal spread and $FEV_1 < 1.5$ L. Surgery is not indicated in scc, which usually has metastasized at the time of diagnosis.

I love the man that can smile in trouble, that can gather strength from distress, and grow brave by reflections - Thomas Paine

## CASE REPORTS

**PATIENT 1** This chronic smoker presented with right shoulder pain for six months. **Findings**: Wasting of small muscles of right hand, reduced pain sensation at right C8-T1 dermatomes, right Horner's syndrome (Fig. 31.1). Right apical dullness. **Investigations**: Chest Xray - (Fig. 31.2). CT scan-guided percutaneous needle biopsy - squamous cell carcinoma. **Diagnosis**: *Pancoast syndrome (PS) due to BC.*

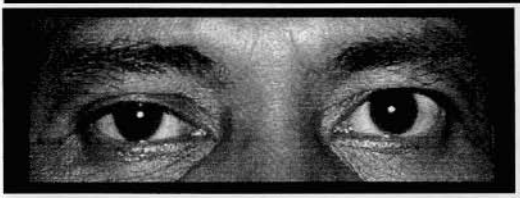


**Fig. 31.1** Right ptosis and miosis.

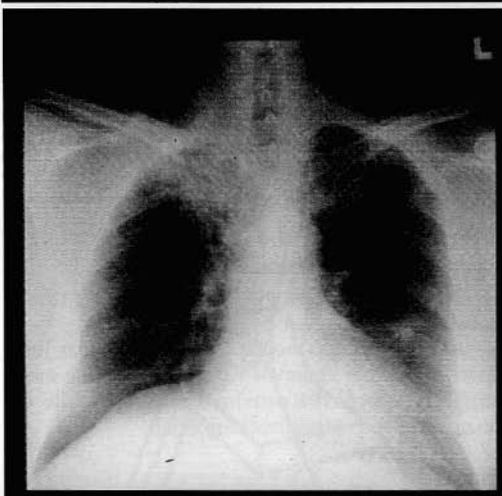


**Fig. 31.2** Right apical opacity.

**Comments** (refer to previous page): Due to the peripheral location of the tumor, pulmonary symptoms (cough, hemoptysis) may be absent in the early stage of PS. The shoulder pain due to PS may be confused with musculoskeletal disorders. As such, the diagnosis of PS can be delayed by up to one year. Thus, when a chronic smoker presents with shoulder pain, one must look hard for signs of PS such as Horner's syndrome.

**PATIENT 2** This chronic smoker presented with progressive dyspnea and swelling of the face. **Findings**: Facial and neck edema with cyanosis, dilated superficial veins in the upper chest (Fig. 31.3 - Section 2). Right middle zone consolidation. **Investigations**: Chest Xray - right middle lobe mass. CT thorax - mediastinal mass infiltrating the superior vena cava. **Diagnosis**: *Superior vena cava obstruction (SVCO) due to BC.*

**Comments**: The most common etiologies of SVCO are BC, followed by lymphoma. SVCO is an emergency - urgent relief of dyspnea is vital. Treatment modalities include steroid, radiotherapy and endovascular stenting.

# BRONCHOGENIC CARCINOMA

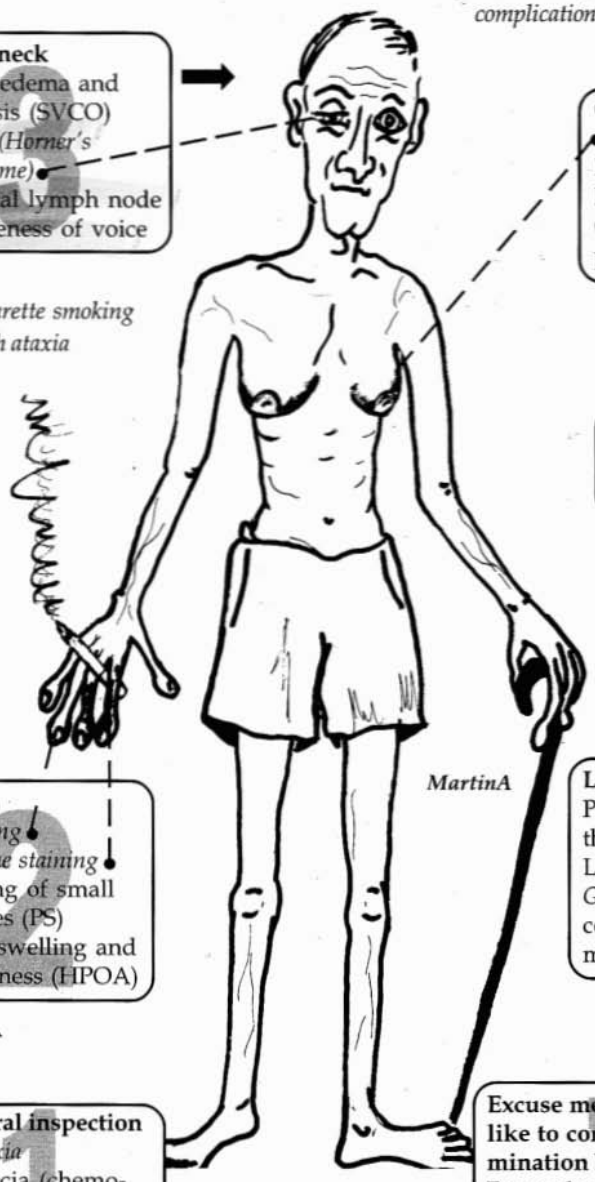
"This man has hemoptysis and weight loss - examine him"

*Look for signs of primary tumor, mediastinal spread, metastases, PNS and treatment complications!*

**Face / neck**
Facial edema and cyanosis (SVCO)
*Ptosis (Horner's syndrome)*
Cervical lymph node
Hoarseness of voice

**Chest**
*Gynecomastia*
Radiation mark
Ribs tenderness
Consolidation / pleural effusion

*The cigarette smoking man with ataxia*



*MartinA*

**Abdomen**
Hepatomegaly (metastases)

**Hands**
*Clubbing*
*Nicotine staining*
Wasting of small muscles (PS)
Wrist swelling and tenderness (HPOA)

**Legs**
Proximal myopathy (Cushing's, LEMS)
*Gait ataxia* (PNS, cerebellar metastases)

**General inspection**
*Cachexia*
Alopecia (chemotherapy)

**Excuse me Sir, I would like to complete my examination by checking the:**
Fever chart, sputum pot
History of smoking

One man with courage makes a majority - Andrew Jackson

# CASE 32 INTERSTITIAL LUNG DISEASE (ILD)

- ILD, also termed diffuse parenchymal lung diseases (DLPDs), are a group of disorders that invlove the space between epithelial and endothelial basement membranes.

## *Causes of ILD*

a) known causes
- drugs - amiodarone, busulphan
- **connective tissue diseases (CTD)**
- occupational exposure - asbestos, silica

b) idiopathic pulmonary fibrosis (IPF)
c) granulomatous DPLD - Sarcoidosis
d) other forms of DPLD

*VIP!*

Common cause of ILD in exam - **ILD due to CTDs** (especially young adults)

## *Clinical features of ILD*

- history:
  - progressive exertional dyspnea, dry cough.
  - drugs, occupational / environmental exposure.
- physical findings:
  - clubbing, inspiratory and fine basal crackles.
  - signs of pulmonary hypertension, cor pulmonale and CTDs.

## *Investigation of ILD*

- chest Xray - bilateral basal reticulonodular shadows, "honeycombing".
- lung function tests - arterial desaturation after exercise, restrictive pattern (normal or ↑ $FEV_1$ / FVC ratio), ↓ transfer factor.
- CTD screen.
- high-resolution CT (HRCT) - helps in diagnosis (e.g. characteristic changes are seen in IPF) and prognostication (demonstrates the extent of disease).
- bronchial lavage - the sampling of cells and non-cellular materials from the lower respiratory tract can be diagnostic (e.g. lymphocytosis in drug-induced lung diseases and inorganic particulate material in occupational lung diseases).
- lung biopsy - transbronchial biopsy and open lung biopsy (useful in Sarcoidosis and ILDs due to CTDs respectively).

## *Specific treatment of ILD*

- steroid / cyclophosphamide.
- treatment of underlying cause.

**Note**: For case reports on ILD due to Rheumatoid Arthritis and Scleroderma, please refer to **Cases 35 and 38** respectively.

## CASE 33 BRONCHIECTASIS

- chronic suppurative inflammation of the bronchi that results in permanent dilatation of the airways.

*Clinical features of bronchiectasis*

- history - chronic cough with copious, purulent sputum.
  - recurrent hemoptysis.
- physical findings - clubbing, bilateral coarse crackles.

*Etiology of bronchiectasis*

- postinfectious
  - measles, pertussis, **tuberculosis (TB)**
  - Aspergillosis
- endobronchial obstruction - bronchial adenoma / carcinoma
- congenital - Kartagener's syndrome, hypogammaglobulinemia (extremely rare)

*VIPs!*

- commonest local cause of bronchiectasis - **TB**
- don't forget the **sputum pot** (copious sputum)!

*Some complications of bronchiectasis*

- pneumonia.
- hemoptysis.
- cerebral abscess.
- amyloidosis.

*Investigation of bronchiectasis*

- sputum AFB / fungal culture.
- sputum culture - *H. influenzae*, Ps. aeruginosa*, Str. pneumoniae**.
- chest Xray - ring-like shadows (airways that are seen on end), tram lines (airways that are perpendicular to the Xray beam), focal opacities.
- Aspergillus precipitin test.
- high-resolution CT:
  - the best tool for diagnosis of bronchiectasis.
  - detects airways changes (e.g. dilatation) that are not visible on Xray.

*common pathogens in bronchiectasis.

*Specific treatment of bronchiectasis*

- bronchopulmonary hygiene - chest physiotherapy, postural drainage.
- antibiotics.
- surgical resection of damaged segments / lobes that are nidus for infection.

There is nothing in the world so much admired as a man who knows how to bear unhappiness with courage - Seneca

## CASE 34 PLEURAL EFFUSION (PE) ★★★

• in the diagnostic approach to PE, the two important questions are:

a) is the fluid a **transudate or exudate**?
b) if the fluid is an exudate, what is the etiology?

**Note**: Distinguishing transudate from exudate (please refer to the following table) is important because if the fluid is a transudate, treatment should focus on underlying cardiac / renal / liver diseases. However, if the fluid is an exudate, more extensive investigations are required.

*Investigation of PE*

- chest Xray / ultrasound / CT scan
  - helps in finding the best site for pleural tap.
- pleural tap and fluid analysis
  - protein, LDH
  - glucose (↓ in infection and malignancy)
  - Gram stain, Ziehl-Neelsen stain
  - culture / cytology
  - adenosine deaminase (↑ in tuberculous effusion).
- percutaneous pleural biopsy
  - indicated in undiagnosed pleural exudates with non-diagnostic cytology and clinical suspicion of tuberculosis or malignancy.

*VIPs!*

Exudate:

Protein > 30 g / l
LDH > 200 IU / l
Pleural : serum LDH ratio > 0.6

| Types of pleural fluid | Characteristics / laboratory findings | Etiology |
|---|---|---|
| Transudate | Protein < 30 g / l<br>LDH < 200 IU / L<br>Pleural : serum LDH ratio < 0.6 | Cardiac failure<br>Nephrotic syndrome<br>Chronic liver disease |
| Exudate | Protein > 30 g / l<br>LDH > 200 IU / L<br>Pleural : serum LDH ratio ≥ 0.6 | Malignancy (primary / secondary)<br>Pneumonia<br>Tuberculosis<br>Pulmonary infarction<br>Connective tissue diseases |
| Hemorrhagic | | Malignancy<br>Pulmonary embolism<br>Trauma |
| Empyema | Turbid, foul-smelling<br>Centrifuged pleural fluid – clear supernatant | Lung infection (pneumonia, abscess)<br>Chest trauma<br>Thoracic surgery<br>Subdiaphragmatic abscess |
| Chylothorax (Fig. 34 – Section 2) | Milky fluid<br>Centrifuged pleural fluid – turbid supernatant<br>Increased triglyceride | Malignancy (lymphoma)<br>Trauma |

# SECTION 3

# CHAPTER 6 – RHEUMATOLOGY

## CASE 35 RHEUMATOID ARTHRITIS (RA) ★★★

- chronic systemic inflammatory disorder involving mainly the joints with a peripheral symmetrical non-suppurative arthritis.
- onset usually 30-40 years.
- F : M ratio = 3 : 1.

### American Rheumatic Association criteria for RA

≥ 4 of the following criteria ; *"RF RISES"*

- **R**heumatoid factor
- **F**inger / hand joints involved for ≥ 6 weeks
- **R**heumatoid nodules
- **I**nvolvement of 3 or more joint areas
- **S**tiffness (morning) ≥ 1 hour for ≥ 6 weeks
- **E**rosions on Xray
- **S**ymmetrical arthritis ≥ 6 weeks

*(Donnelly TJ)*

*VIP!*

**"RF RISES"**

Popular exam case is rheumatoid hand - bilaterally **symmetrical**, destructive and deforming polyarthropathy

### How do you monitor disease activity in RA?

- clinical - duration of morning stiffness, joint tenderness, limitation of function
- Xray - progressive joint erosion (Fig. 35.1)
- blood tests - ESR, C-reactive protein (CRP)

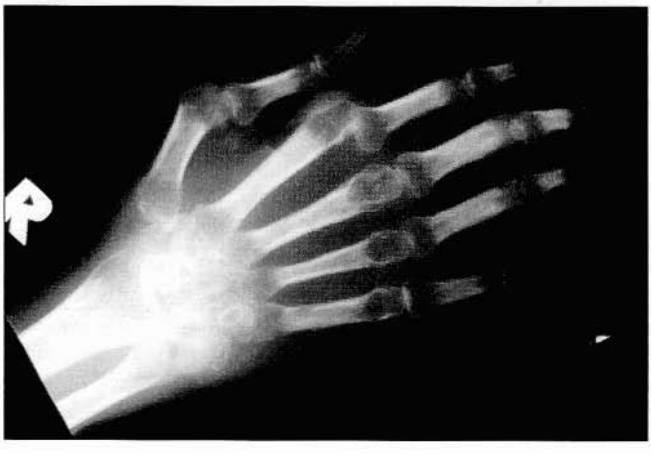



**Fig. 35.1** Hand Xray in RA - periarticular osteoporosis, decreased joint space and joint erosion at the metacarpophalangeal joints (MCPJs) and proximal interphalangeal joints (PIPJs). The distal interphalangeal joints (DIPJs) are spared.

*What is the significance of rheumatoid factor (RF)?*
- marked elevation of RF correlates closely with extra-articular features (rheumatoid nodules, vasculitis, Sjogren's syndrome).
- **does not correlate with activity of the arthritis!**

*What is the significance of rheumatoid nodule?*
- indicates seropositivity and aggressive arthritis.

*Causes of splenomegaly in RA*
- primary disease, Felty's syndrome, Sjogren's syndrome, amyloidosis.

*Felty's syndrome*
- seropositive RA + neutropenia + splenomegaly.
- serious infections, vasculitis.

*Sjogren's syndrome*
- association of keratoconjunctivitis sicca* (reduced lacrimal secretion) and xerostomia (reduced salivary gland secretion) with a connective tissue disorder (usually RA).
- anti-Ro (SS-A) and anti-La (SS-B) antibodies are positive.

*VIP!*

Serial values of RF titers are **not useful in monitoring progression of arthritis**

*diagnosed using the *Schirmer's filter paper test*; filter paper is placed at the lower eyelid and the length of the wet column is measured - > 15 mm in normal and < 5 mm in keratoconjunctivitis sicca.

*Causes of anemia in RA*
- anemia of chronic disease.
- Felty's syndrome.
- bleeding gastric ulcer (analgesic).
- bone marrow suppression (cytotoxic).

*Respiratory complications in RA*
- pleuritis / effusion.
- interstitial pulmonary fibrosis.

*Destiny is not a matter of chance, it is a matter of choice; it is not a thing to be waited for, it is a thing to be achieved*

- William Jennings Bryan

If one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with success unexpected in common hours - Henry David Thoreau

- rheumatoid nodules.
- iatrogenic - asthma (NSAID), interstitial fibrosis (methotrexate).

*Some neurological complications of RA*

- carpal tunnel syndrome.
- atlanto-axial subluxation - cervical myelopathy.
- mononeuritis multiplex.

*Specific treatment of RA*

- NSAID - for rapid symptomatic relief.
- DMARDs (disease-modifying anti-rheumatic drugs) - start as soon as diagnosis is made (within three months after onset of symptoms) e.g. methotrexate, penicillamine, Tumor-Necrosis Factor antagonists.

*VIP!*

Psoriatic arthritis may resemble RA - look for psoriatic plagues at **extensor aspect of elbows**

## CASE REPORT

This lady with chronic joint pain was treated for bleeding duodenal ulcers. **Findings**: Anemic, deforming polyarthropathy of hands and feet (Fig. 35.2-3 - Section 2), basal lung crackles. **Investigations**: Hb 7.3 g/dl, ESR 112 mm/hour, ↑ rheumatoid factor, chest Xray - bilateral reticulonodular shadowing, CT thorax (Fig. 35.4). **Diagnosis**: *RA with Interstitial Lung Disease and analgesic gastropathy.*

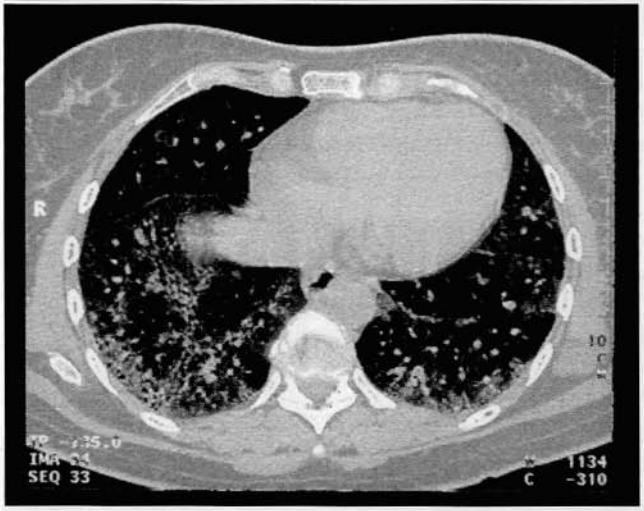



**Fig. 35.4** High-resolution CT thorax showing predominantly reticular appearance which is suggestive of interstitial lung disease.

**Comments**: This is the classical destructive and deforming polyarthropathy affecting the MCPJs and PIPJs, sparing the DIPJs. The systemic complications of RA are due to both primary disease and treatment side effects.

# RHEUMATOID ARTHRITIS

"This patient has chronic joint pain - examine her"

*Look for local (joint) / systemic manifestations and iatrogenic complications!*

**1 General inspection**
Cushingoid facies

**2 Hands**
Inspection:
*Boutonniere / swan neck / "Z" deformities*
Ulnar deviation
Palmar subluxation (MCPJ)
Joint erythema / swelling
Palmar erythema
Psoriatic nail*
Palpation / joint movement
Neurological: Tinel's sign
Function: writing

**3 Elbow**
Rheumatoid nodule
Psoriatic plagues*

**4 Face**
Mouth - dryness
TMJ crepitus
Scalp - psoriasis

**5 Eyes**
Episcleritis
Scleromalacia (perforans)
Keratoconjunctivitis sicca
Cataract (steroid)

**6 Precordium**
Mitral / aortic regurgitation
Pericardial rub
Loud P2

**7 Lungs**
Pleural rub
Basal crackles - interstitial fibrosis, pneumonia

**8 Abdomen**
Splenomegaly

**9 Legs**
Ruptured Baker's cyst
Ulcers (vasculitis)
Mononeuritis multiplex

**10 Excuse me Sir, I would like to complete my examination by checking the:**
Urine protein (penicillamine, infection, amyloidosis)


*Psoriatic arthropathy can mimic rheumatoid hand!



My grandfather once told me that there were two kinds of people: those who do the work and those who take the credit. He told me to try to be in the first group; there was much less competition - Indira Gandhi

# CASE 36 ANKYLOSING SPONDYLITIS (AS)

- typically affects young adults (age 30-40 years).
- M : F ratio = 9 : 1.
- associated with HLA-B27 antigen.

*Clinical features*

- loss of spinal mobility
  - reduced flexion / extension of lumbar spine and chest expansion
  - **"occiput to wall"** test (Fig. 36.1)
  - **Schober's test***
- extra-articular features
  - peripheral joints (hips, knees, shoulders)
  - anterior uveitis
  - apical lung fibrosis
  - aortic regurgitation
  - diarrhea

*Radiological findings*

- sacroiliac joint erosion / sclerosis
- vertebral changes
  - "squaring" of vertebra
  - ossification of anterior longitudinal ligament
  - syndesmophyte formation
  - "bamboo" spine

**Fig. 36.1 Positive "occiput to wall" test** - with the heels and back touching the wall, the patient is unable to touch the wall with the back of his head (without raising the chin) due to the fixed flexion deformity of the cervical spine.

*indicates lumbar spine involvement if lumbar flexion does not increase by > 5 cm the distance betwen L5 (level of posterior iliac spine) and a point 15 cm above.

*Specific treatment of AS*

- NSAIDs, Tumor-Necrosis Factor antagonists.
- Hip arthroplasty.

*VIP!* *"The 7A's of AS"*

**A**nterior uveitis
**A**ortic regurgitation
**A**pical lung fibrosis
**A**chilles tendinitis
**A**tlantoaxial subluxation
**A**myloidosis
**A**utoimmune bowel disease

*(Smith M)*

## CASE REPORT

This 51-year-old man had chronic back pain for 21 years. **Findings**: "Question-mark" posture (Fig. 36.2), complete absence of movement in all directions at cervical and thoracic spine, ↓↓ flexion / extension / lateral flexion at lumbar spine, ↓↓ chest expansion. **Investigations**: Xray lumbosacral spine - "bamboo spine" appearance (Fig. 36.3-4). **Diagnosis**: *Advanced AS.*

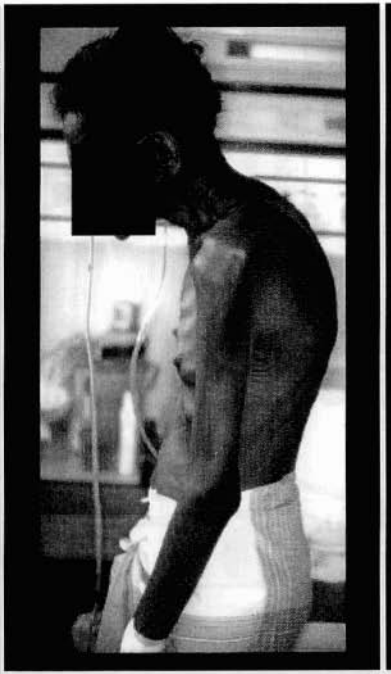


**Fig. 36.2** "Question-mark" posture in advanced AS - loss of lumbar lordosis, fixed kyphosis of thoracic spine with compensatory extension of cervical spine.

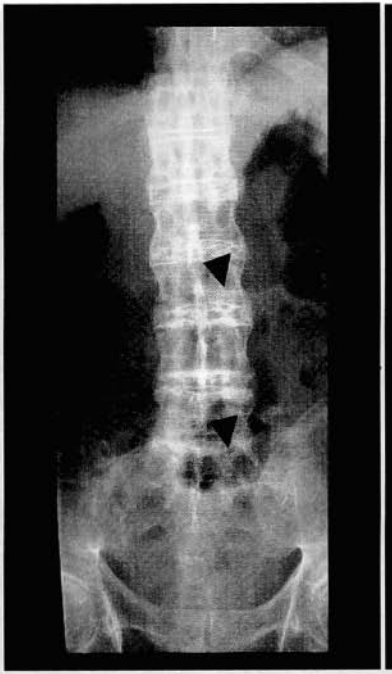


**Fig. 36.3** The "bamboo spine" in advanced AS. Calcification of the anterior longitudinal ligament (black arrowheads) and loss of sacroiliac joints.

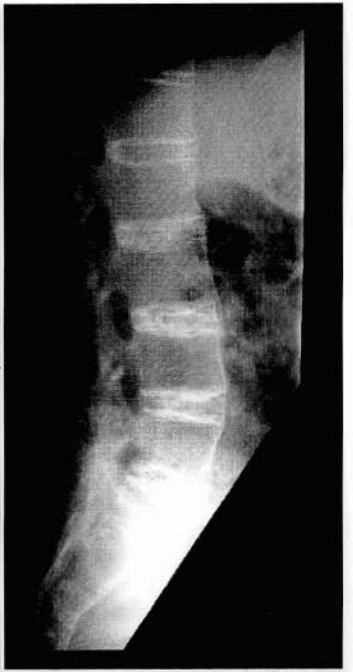
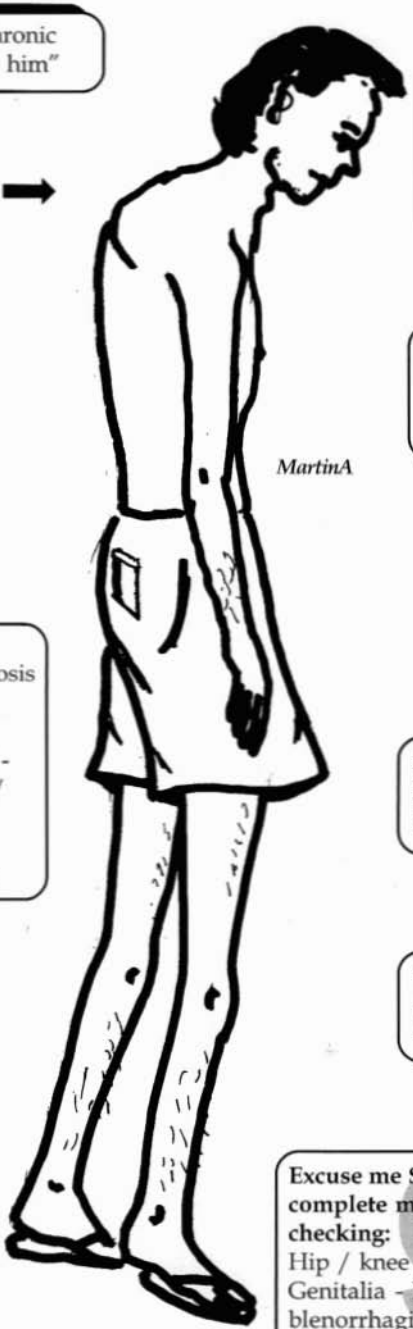


**Fig. 36.4** Fusion of posterior facet joints and intervetebral disc calcification.

# ANKYLOSING SPONDYLITIS

"This patient has chronic backache - examine him"




**1** **Spine (standing)**
Loss of lumbar lordosis
Palpate - vertebral tenderness
Reduced movement - flexion / extension / lateral flexion
*Schober's test*
*"Occiput to wall" test*

**2** **Spine (Prone)**
Sacroiliac tenderness*

**3** **Face**
Eyes - uveitis, conjunctivitis
Scalp - psoriatic arthritis**

**4** **Chest**
Chest expansion (if < 5 cm, indicates costovertebral involvement

**5** **Precordium**
Early diastolic murmur (aortic regurgitation)

**6** **Lungs**
Apical crackles

**7** **Abdomen**
Hepatosplenomegaly (amyloidosis)

**8** **Feet**
Achilles tendinitis
Plantar fasciitis

**9** **Excuse me Sir, I would like to complete my examination by checking:**
Hip / knee / shoulder joints
Genitalia - keratoderma blenorrhagica (Reiter's disease**)

*push on the sacrum with the heel of both hands.
**these disorders, together with AS, belong to the spondyloarthropathies (a group of seronegative, inflammatory arthritis characterized by involvement of the spine, peripheral arthritis and enthesitis).

## CASE 37 DERMATOMYOSITIS / POLYMYOSITIS ★

• inflammatory muscle disorders of unknown origin.

| Features | Polymyositis (PM) | Dermatomyositis (DM) |
|---|---|---|
| Sex | F > M | F > M |
| Age | adult | childhood and adult |
| Rash | no | yes |
| Associated conditions | interstitial lung disease, malignancy*, other connective tissue diseases | interstitial lung disease, malignancy*, other connective tissue diseases |

*common primary sites; lung and colon in men, breast and ovary in women.

### Skin manifestations of DM

- ***heliotrope rash*** - purplish rash seen on the eyelids and forehead
- ***Gottron's sign*** - papular, red and scaly rash on the knuckles
- flat, erythematous, photosensitive rash on the face, neck and anterior chest (***V-sign*** - Fig. 37.1 - Section 2), shoulders and upper back (***shawl sign*** - Fig. 37.2 - Section 2)
- subcutaneous calcification - usually in children
- nail changes - telangiectasia and periungual erythema
- Raynaud's phenomenon

### *Investigation of PM and DM*

- serum CK.
- EMG - myopathic pattern.
- muscle biopsy - inflammatory cells.
- screen for malignancy.

*VIP!* Look for **malignancy in DM / PM** - especially aged > 40 years

## CASE REPORTS

**PATIENT 1** Progressive proximal muscle weakness for two months. **Findings** (Fig. 37.3-4 - Section 2): ***Facial rash and Gottron's sign.*** **Investigations**: CK 4538 IU/l, muscle biopsy - inflammatory cells, EMG - myopathic pattern. **Diagnosis**: *DM.* **Progress**: The facial rash and muscle weakness resolved with steroids. She remained well six years later.

**PATIENT 2** A 54-year-old lady initially presented with proximal weakness and facial rash due to DM. Eleven months later, she was diagnosed to have left **breast carcinoma**. Unfortunately, she declined chemotherapy and died six months later.

**Comments**: Most cases of malignancy occur within two years after the onset of DM / PM. Thus, cancer surveillance is vital in these patients.

A hospital should also have a recovery room adjoining the cashier's office - Francis O'Walsh

# CASE 38 SCLERODERMA

- a multi-system disorder which is characterized by fibrosis and degenerative changes in the skin and many internal organs.
- onset usually 30-50 years.
- F : M ratio = 3 : 1.

## *Diagnostic criteria for scleroderma*

- Major criterion
  - proximal scleroderma (to metacarpophalangeal and metatarsophalangeal joints)
- Minor criteria
  - sclerodactyly*
  - fingertip pitting or atrophy**
  - bibasal pulmonary fibrosis

(At least the major or 2 or > minor criteria required for the diagnosis)

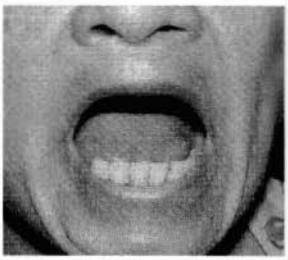


**Fig. 38.3** Microstomia in scleroderma.

*thickening of the skin which is limited to fingers and not spreading proximal to the metacarpophalangeal joints.
**due to ischemia (Raynaud's phenomenon).

## *Clinical manifestations of scleroderma* (Fig. 38.1-2 - Section 2, Fig. 38.3)

- Skin - hyperpigmentation, telangiectasia, subcutaneous calcification, fingertip ulcers
- Cardiac - myocardial fibrosis, cardiac failure
- Lung - interstitial lung disease, aspiration pneumonia, pulmonary hypertension*
- Esophageal dysfunction
- Raynaud's phenomenon**
- Obstruction (pseudo) of intestine
- Dry eyes / mouth (Sjogren's syndrome)
- Endocrine (hypothyroidism)
- Renal failure - malignant hypertension
- Myopathy
- Arthritis

*VIP!*

*"SCLERODERMA"*
*(Donnelly TJ)*

*particularly in the CREST syndrome.
**the most common presenting symptom.

## *CREST syndrome*

- Calcinosis, Raynaud's phenomenon, Esophageal dysmotility, Sclerodactyly, Telangiectasia.
- associated with anti-centromere antibody.
- better prognosis than scleroderma.

*Raynaud's phenomenon (RP)*

- a syndrome of reversible peripheral ischemia usually occurring at the hands and feet, precipitated by cold.
- fingers turn white → cyanosed → bright red (rewarming stage).

*commonest cause of RP.
**occurrence of RP without any obvious underlying cause.

*Causes of RP:* ***"COLD HAND"***

- Connective tissue disease (scleroderma*)
- Occupational (vibrating tool)
- Lupus erythematosus
- Drugs (beta-blockers)
- Hematological (cryoglobulin)
- Atherosclerosis
- Neurological - cervical rib
- Disease of unknown origin (primary RP**)

*Causes of anemia in scleroderma*

- iron deficiency (chronic esophagitis).
- anemia of chronic disease.
- megaloblastic anemia (bacterial overgrowth in stagnant loop syndrome).

*Management of scleroderma*

- RP - avoid cold and beta-blockers
  - nifedepine, sympathectomy.
- Penicillamine - inhibits collagen formation.
- Others: reflux esophagitis - Omeprazole, malabsorption syndrome - oral antibiotics, renal crisis - ACE inhibitors.

## CASE REPORT

This lady had progressive dyspnea on exertion for six months. Five years earlier, she had noticed her fingers turning "blue black" while washing dishes. **Findings** (Fig. 38.4-6 - Section 2): Tachypnea, bibasal lung crackles. **Investigations**: Chest Xray (Fig. 38.7) - bibasal reticulonodular shadows. **Diagnosis**: *Scleroderma with Interstitial Lung Disease (ILD).*

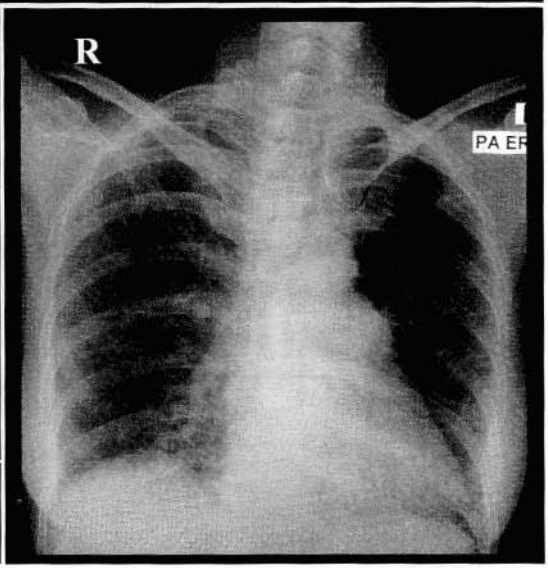



**Fig. 38.7** Bilateral reticulonodular shadowing (ILD).

# SCLERODERMA

"This patient has dysphagia - examine her"

**Eyes**
Hypertensive retinopathy
Anemia

**Face**
*Telangiectasia*
Smooth, shiny skin
*Beak-shaped nose*
*Perioral furrowing*
Microstomia**
Pursed lip

**Hands**
*Raynaud's phenomenon*
Fingertip ulcers
Sclerodactyly*
Calcinosis
Finger pulp atrophy
Fixed flexion deformity
Hand function

*MartinA*

**Chest**
Roman breast plate (tight skin)
Loud P2 (pulmonary hypertension)
Pericardial rub
Bibasal crackles (interstitial fibrosis)

**Abdomen**
Sympathectomy scar
Hepatomegaly (associated primary biliary cirrhosis)

**Legs**
Proximal myopathy (myositis)
Leg ulcers (vasculitis)

**Excuse me Sir, I would like to complete my examination by checking the:**
Blood pressure
Urine - proteinuria
Stool - steatorrhea

*demonstrated by difficulty in pinching up the skin.
**demonstrated by inability to insert patient's own three fingers into his / her mouth.

## CASE 39 SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

★★

- a multisystem disorder characterized by circulating autoantibodies and immunologically-mediated organ damage.
- onset: 20-30 years.
- F : M ratio = 9 : 1.

*VIP!* *Consider SLE in a Chinese lady with facial rash and alopecia*

### *Diagnosis of SLE*

*"ORDER HIS ANA"*

- Oral ulcers
- Rash (malar)
- Discoid rash
- Exaggerated photosensitivity
- Renal - proteinuria, cellular casts
- Hematological - hemolysis, leuko- / thrombocytopenia
- Immunological - LE cell, anti-dsDNA Ab, VDRL
- Serositis - pleuritis, pericarditis
- Arthritis - non-erosive arthritis
- Neurological - seizures, psychosis
- Antinuclear antibody

*(Donnelly TJ)*

*VIP!* Diagnosis of SLE - *"ORDER HIS ANA"*

**Note**: American Rheumatic Association criteria - to make a diagnosis of SLE, any four or more of the 11 criteria should be present, either simultaneously or serially.

### *What is the significance of antinuclear factor?*

- a **sensitive screening test** for SLE (present in 95% of cases) - a negative antinuclear factor makes SLE extremely unlikely.
- **not specific** for SLE - also positive in rheumatoid arthritis, scleroderma, Sjogren's syndrome, chronic liver disease, thyroiditis, myasthenia gravis.

### *What is the significance of anti-double stranded DNA antibody?*

- a **specific** test for SLE (virtually diagnostic).
- **not a sensitive test** for SLE - present in only 60% of SLE.
- high titer of anti-double stranded DNA Ab is usually associated with active SLE (especially renal involvement).

### *Markers of disease activity in SLE*

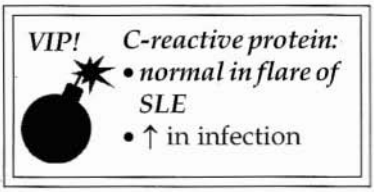
- ↑ ESR, ↓ C3 and C4, ↑ anti-double stranded DNA Ab titer.

### *Spectrum of renal pathology in SLE*

- Normal light microscopy: positive mesangial immunofluorescence.
- Mesangial changes only.

Strength does not come from physical capacity. It comes from an indomitable will - Mahatma Gandhi

- Focal proliferative glomerulonephritis (GN).
- Diffuse proliferative GN.
- Membranous GN.
- Advanced sclerosis.




*Antiphospholipid syndrome*

- a hypercoagulable state: recurrent venous + / - arterial thrombosis + / - abortion in the presence of antiphospholipid antibodies.
- it may be primary or secondary (most commonly SLE).

*Antiphospholipid antibodies*

- anticardiolipin antibody.
- lupus anticoagulant - an antibody interfering with the prothrombin activator complex → prolonged PTT which is not corrected by addition of normal plasma (thus, excluding a factor deficiency). However, it is associated with paradoxical thrombosis in vivo.
- false-positive syphilis reagins (VDRL).

*Mixed connective tissue disease*

- features resembling SLE, scleroderma and polymyositis in the presence of high titers of anti-RNP (ribonucleoprotein) antibodies.
- cardiac, renal and neurological involvement is rare.
- excellent prognosis, good response to steroid.

*Treatment of SLE*

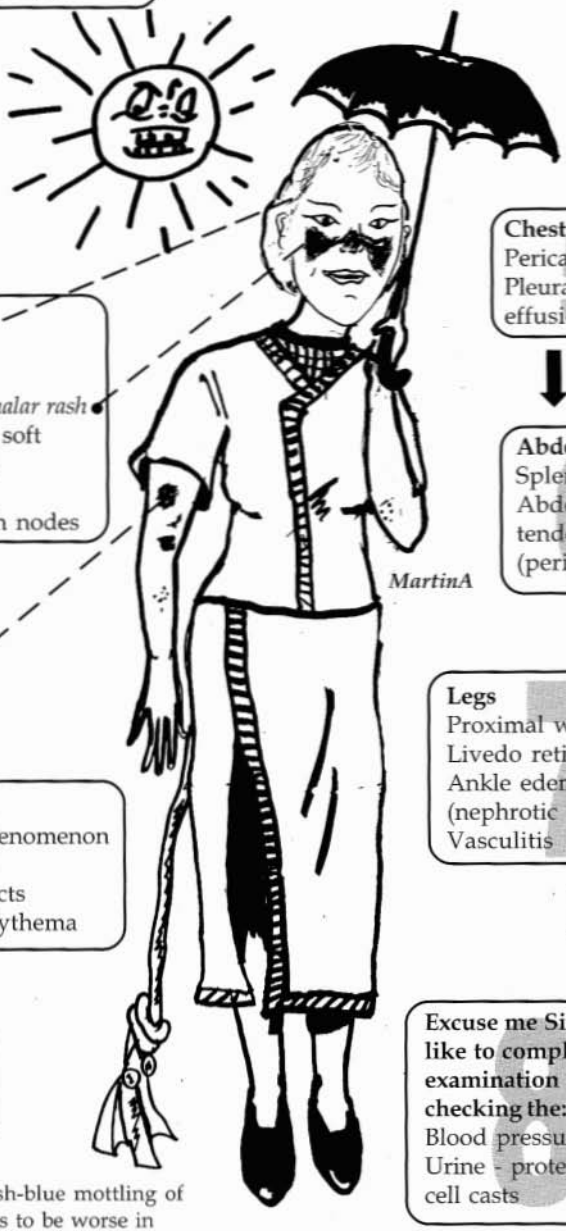
- arthralgia, pains (arthritis, pleurisy) - NSAIDs.
- rash, arthritis - chloroquine.
- hematological disorders, serositis, focal GN - oral prednisolone.
- cerebral lupus - exclude infection, pulse IV methylprednisolone.
- diffuse proliferative / membranous GN - pulse IV methylprednisolone + cyclophosphamide.

## CASE REPORT

This 36-year-old Chinese lady complained of facial rash which worsened with sun exposure (photosensitivity). She also had alopecia and joint pain. **Findings**: Blood pressure 180 / 120 mm Hg. Malar rash (Fig. 39 - Section 2) and oral ulcers present. No ankle edema. **Investigations**: Positive antinuclear factor, ↓ C3 / C4, ↑↑ anti-dsDNA antibody titer, urine - deformed red cells ++, white cells ++, red cell casts ++, protein +++. 24 hours urine protein - 1.2 g. **Diagnosis**: *SLE with nephritis.* **Progress**: She responded to pulsed IV methylprednisolone followed by oral prednisolone.

# SLE

"This young Chinese lady has facial rash and joint pain - examine her"




**1 General inspection**
Cushingoid

**2 Hands**
Raynaud's phenomenon
Arthritis
Nailfold infarcts
Periungual erythema

**3 Arms**
*Vasculitis*

**4 Face / head**
*Alopecia*
Discoid rash
*Photosensitive malar rash*
Eyes - anemia, soft exudate
Oral ulcers
Cervical lymph nodes

**5 Chest**
Pericardial rub
Pleural rub / effusion

**6 Abdomen**
Splenomegaly
Abdominal tenderness (peritonism)

**7 Legs**
Proximal weakness
Livedo reticularis*
Ankle edema (nephrotic syndrome)
Vasculitis

**8 Excuse me Sir, I would like to complete my examination by checking the:**
Blood pressure
Urine - protein, cell casts

*persistent reddish-blue mottling of the legs that tends to be worse in cold weather.

Reflect upon your present blessings, of which every man has many - not on your past misfortunes, of which all men have some - Charles Dickens


RHEUMATOLOGY

# SECTION 3

# CHAPTER 7 – GASTROENTEROLOGY

## CASE 40 HEPATOMEGALY ★★★

*When is it necessary to measure liver span?*

- the lower edge of the liver can be palpable about one to two finger-breadths below the subcostal margin in chronic obstructive airway disease or asthma. In these cases, the normal liver is displaced downward by the hyperinflated lungs, and the liver span* is normal.

*normal liver span: 6-10 cm in women, 8-12 cm in men.



*Causes of hepatomegaly*

- **Infection***
  - viral hepatitis, abscess (amebic, pyogenic), typhoid
- Infiltration
  - benign - fatty liver
  - **malignant*** - myelo- / lymphoproliferative disorders, hepatoma, metastases
- Autoimmune - lupoid hepatitis
- Drugs / toxin - **alcohol***
- Congestion - **congestive cardiac failure***
- Metabolic - Wilson's disease (rare)

*VIP!*

Commonest causes of hepatomegaly in exam - **infection** and **malignancy**

*commonest causes.

**TENDER LIVER**

- hepatitis
- acute biliary obstruction
- abscess, cholangitis
- acute congestion - cardiac failure

**FIRM AND IRREGULAR LIVER**

- hepatoma
- cirrhosis
- metastases
- cystic liver

**PULSATILE LIVER**

- tricuspid regurgitation

**HEPATIC BRUIT** (hypervascularity)

- hepatoma, metastases

**FRICTION RUB**

- tumor

# CASE 41 SPLENOMEGALY

★★★

*Is it a spleen?*

*Memorize this...*

- can't get above it
- dull to percussion
- descends inferomedially with inspiration
- splenic notch
- not ballottable

## *Causes of splenomegaly*

- Congestion*
  - congestive cardiac failure, portal hypertension
- Hemolytic anemia*
  - Thalassemia, hereditary spherocytosis
- Infection*
  - bacterial - infective endocarditis, typhoid, typhus
  - viral - CMV, infectious mononucleosis
  - parasitic - malaria
  - fungal
- Neoplasia* - myelo-/ lymphoproliferative disorders
- Autoimmune - connective tissue disease

*"CHINA"*

*commonest causes.

## *Causes of massive splenomegaly*

- Myeloid leukemia
- Myelofibrosis
- Malaria

*"Three Ms (Massive)"*

## *Causes of hepatosplenomegaly*

- **Cirrhosis with portal hypertension***
- **Hematological disorders*** - myelo- / lympho-proliferative disorders
- Infection - infectious mononucleosis, acute viral hepatitis
- Infiltrative - amyloidosis
- Connective tissue disease - systemic lupus erythematosus

*commonest causes.

*VIP!*

Common causes of splenomegaly in exam - **congestion, hemolytic anemia, infection and neoplasia**



I learned a long time ago that minor surgery is when they do the operation on someone else, not you
- Bill Walton

## CASE 42 CHRONIC LIVER DISEASE ★★★

*Causes of chronic liver disease*

- **chronic alcohol ingestion**
- **viral hepatitis** (HBV, HCV)
- drugs - methyldopa, methotrexate
- autoimmune hepatitis
- primary biliary cirrhosis (PBC)*
- Wilson's disease**
- cryptogenic

*VIP!*  Commonest causes of chronic liver disease - **viral hepatitis** and **alcohol** ingestion

*middle aged women.
**young adults.

*Signs of portal hypertension*

- specific signs - caput medusae, venous hum (heard over umbilical collaterals); anorectal varices.
- non-specific signs - ascites, splenomegaly.

*Complications of chronic liver disease*

- **HE**patic encephalopathy
- **P**ortal hypertension (+ variceal hemorrhage)
- **A**scites
- **T**umor (hepatoma)
- **I**nfection (spontaneous bacterial peritonitis)
- **K**idney failure (hepatorenal syndrome)

*"HEPATIK"*

*Mechanism of ascites in chronic liver disease*

- activation of renin-angiotensin-aldosterone system (→ increased sodium and water retention) due to ↓ "effective" central blood volume (dilatation of splanchnic vascular bed).
- hypoalbuminemia, portal hypertension, lymphatic obstruction → accumulation of fluid in the peritoneal cavity.

*Causes of hematemesis in alcoholics*

- alcoholic gastritis.
- Mallory-Weiss syndrome.
- variceal hemorrhage.
- peptic ulcer disease.
- coagulopathy.

*Precipitating factors for hepatic encephalopathy*

- **H**emorrhage
- **E**lectrolyte (hypokalemia)
- **P**rotein-rich diet
- **A**lcohol / **A**nalgesic
- **T**rauma
- **I**nfection
- **C**onstipation
- **S**urgery

*"HEPATICS"*

*(Wasekar C)*

*Investigation of chronic liver disease:*

- full blood count

a) anemia - gastrointestinal bleeding, alcohol (suppression of erythropoiesis), folate deficiency, hypersplenism

b) thrombocytopenia and leukopenia (hypersplenism, bone marrow suppression by alcohol)

- liver function tests (prothrombin time)
- viral serology - HBV, HCV
- serum autoantibodies

a) antimitochondrial antibody - PBC

b) smooth muscle antibody, antinuclear factor, anti-liver-kidney microsomal antibody - autoimmune hepatitis

- serum á-fetoprotein - hepatoma
- ascitic fluid analysis
- ultrasound liver - nodular liver (cirrhosis), hepatoma

*Some laboratory markers of alcoholic liver disease*

- γ-glutamyltransferase (GGT), ↑ MCV.
- liver biopsy - Mallory's hyaline (not pathognomonic).

*Common treatment modalities for variceal bleeding*

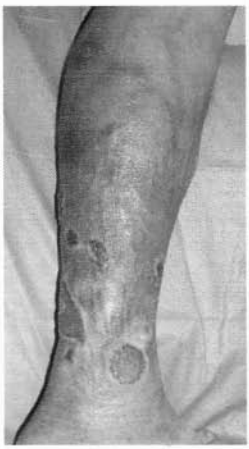
- blood transfusion.
- endoscopic sclerotherapy / band ligation.
- intravenous octreotide.

*Treatment of hepatic encephalopathy*

- identify and treat precipitating factors.
- laxative - lactulose.
- oral neomycin - eradication of gut flora.

*VIP!*

Injection marks and tattoo are suggestive of chronic HBV / HCV infection



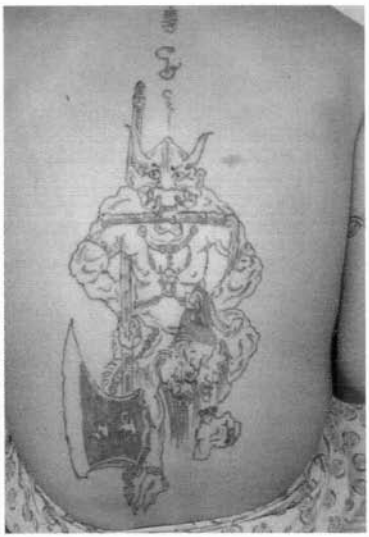


**Fig. 42** A 36-year-old intravenous drug user with chronic hepatitis B infection - he was treated for infected left leg ulcer *(left)* secondary to repeated intravenous injection. He also had rather unique tattoos *(right)* - another risk factor for viral hepatitis.

# CHRONIC LIVER DISEASE

*Look for etiology and complications of chronic liver disease!*

"Carry out a general examination and then proceed to the abdomen"

**Face**
Sclera - jaundice
Xanthelasmas (PBC$^{\Psi}$)
KF ring$^{£}$ (Wilson's)
Parotid swelling (alcoholism)

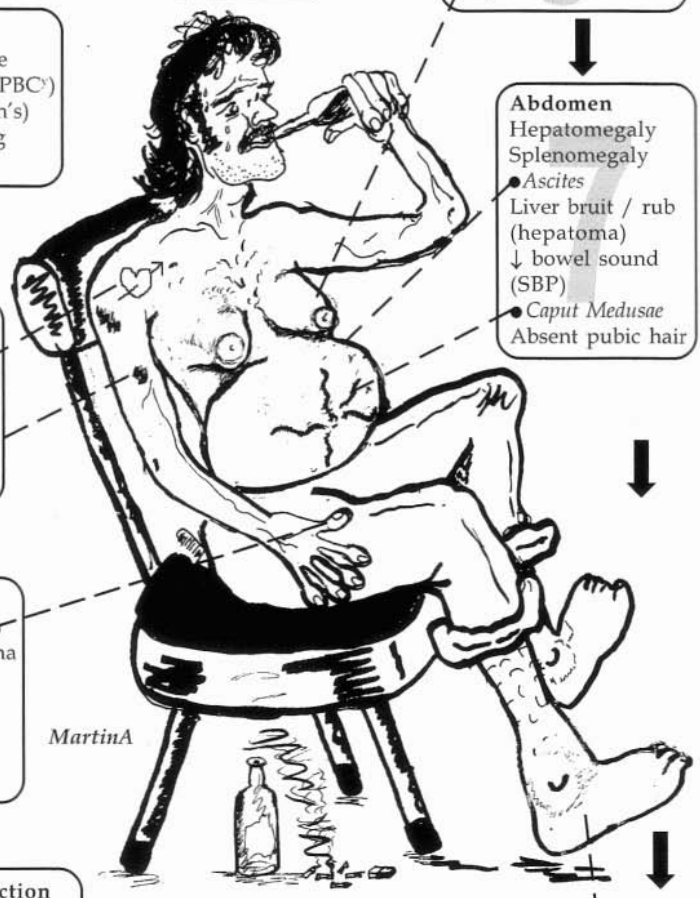
**Neck**
Lymph nodes

**Chest**
Spiders
Absent axillary hair
• *Gynecomastia*

**Abdomen**
Hepatomegaly
Splenomegaly
• *Ascites*
Liver bruit / rub (hepatoma)
↓ bowel sound (SBP)
• *Caput Medusae*
Absent pubic hair

**Forearm**
Scratch marks (PBC$^{\Psi}$)
*Tattoo* • (viral hepatitis)
*Bruising* • (coagulopathy)

**Hands**
*Finger clubbing* •
Palmar erythema
Leukonychia
Dupuytren's contracture (alcoholism)
Liver flap*




**General inspection**
Hyperpigmentation (hemochromatosis)
Drowsiness (hepatic encephalopathy)

**Legs**
• *Ankle edema*

**Excuse me Sir, I would like to complete my examination by checking the following:**
Testicular atrophy.
Constructional apraxia** (hepatic encephalopathy)
History - alcoholism, blood transfusion, drug abuse

*a form of myoclonus (NOT tremor).
**draw a five-pointed star.
$^{\Psi}$primary biliary cirrhosis.
$^{£}$Kayser-Fleischer ring.

## CASE 43 ABDOMINAL MASSES ★★

*Is it a kidney?*

- can get above it
- moves inferiorly with inspiration
- resonant on percussion
- ballottable

*Causes of enlarged kidney*

*Unilateral*

- **renal cell carcinoma***
- **hydronephrosis***
- acute pyelonephritis
- pyonephrosis
- renal abscess
- polycystic kidney (asymmetrical enlargement)

*Bilateral*

- **polycystic kidneys***
- **hydronephrosis***
- pyonephrosis
- others (renal cell carcinoma, amyloidosis, acromegaly) - rare

*VIP!*

Favorite exam cases - **polycystic kidneys** and **transplanted kidney** (iliac fossa mass)

*common causes.

**EPIGASTRIUM**
- carcinoma of stomach
- pancreatic tumor / pseudocyst
- mass in the left lobe of liver
- retroperitoneal lymph node
- carcinoma of transverse colon

**RIGHT ILIAC FOSSA**
- carcinoma of cecum
- ovarian tumor
- **transplanted kidney**
- carcinoma of transverse colon
- appendiceal abscess

**OTHER ABDOMINAL MASSES**

**LEFT ILIAC FOSSA**
- carcinoma of sigmoid / descending colon
- ovarian tumor
- **transplanted kidney**
- diverticular abscess
- feces

**PELVIS**
- bladder
- ovarian tumor
- uterus (pregnancy, tumor, fibroid)

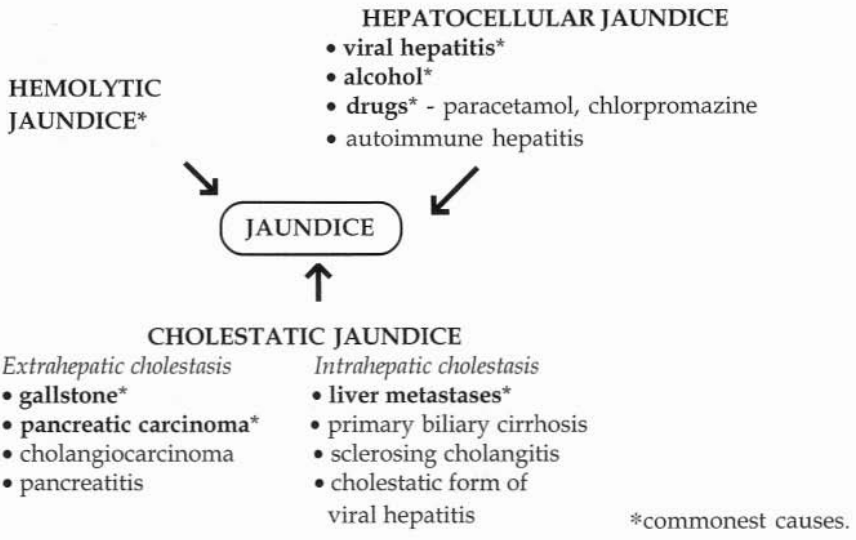
After two days in the hospital, I took a turn for the nurse - W.C. Fields

## CASE 44 JAUNDICE ★★★

- yellowish discoloration of the skin, sclera and mucous membranes due to bilirubin, a yellowish-orange pigment.
- usually clinically evident when serum bilirubin is more than 3 mg / dl (51.3 umol / l).

**Note**: Carotenemia is yellowish discoloration of the skin but **not** the sclera and mucous membranes. In addition, the urine color is normal.

*Causes of jaundice*




*What is Courvoisier's law?*

- if the gallbladder is enlarged and the patient is jaundiced, the cause is unlikely to be gallstone.

*What is Charcot's triad?*

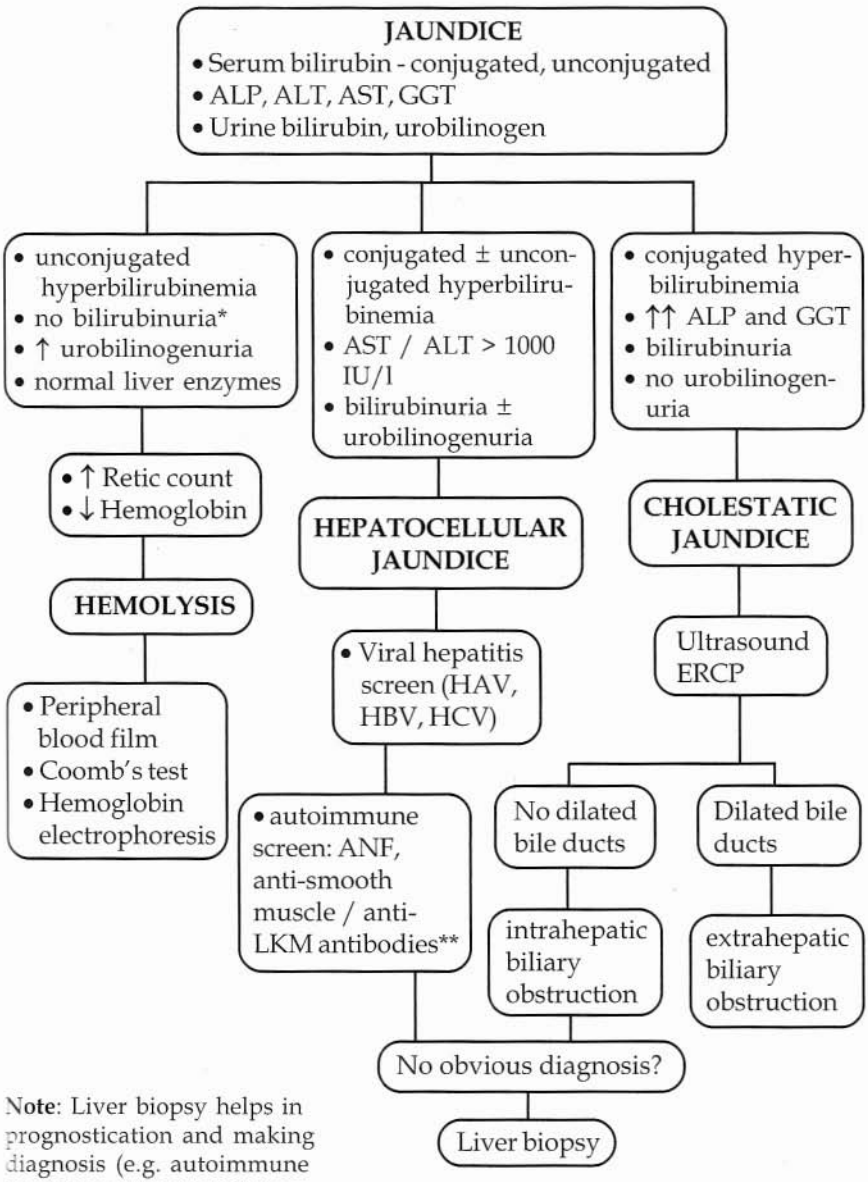
- triad of fever, right hypochondrium pain and jaundice that suggests cholangitis.

*Liver enzymes in the investigation of jaundice*

- ALP (alkaline phosphatase) and GGT (γ-glutamyltransferase): markers of cholestasis.
- ALT (alanine aminotransferase) and AST (aspartate aminotransferase): markers of hepatocellular injury

  A**ST**:ALT ratio > 1 → alcoholic hepatitis (remember **ST**out).

# INVESTIGATION OF JAUNDICE




**Note**: Liver biopsy helps in prognostication and making diagnosis (e.g. autoimmune hepatitis, primary biliary cirrhosis) when blood and imaging tests cannot establish a definitive diagnosis.

*unconjugated bilirubin is usually all protein-bound and not water-soluble: thus, it cannot be excreted in the urine.
**anti-liver-kidney microsomal antibody.

Statistics are like a bikini. What they reveal is suggestive but what they conceal is vital
- Aaron Levenstein

## CASE 45 ASCITES ★★

- pathological accumulation of fluid in the peritoneal cavity (normal people have a small amount of peritoneal fluid, especially in women).

**Note**: The causes of abdominal distension - fluid, fetus, fat, flatus and feces (5 Fs).

*Causes of ascites*

| High gradient (SAAG = or > 11 g / l) | Low gradient (SAAG < 11 g / l) |
|---|---|
| Cirrhosis (especially with portal hypertension) | Peritoneal carcinomatosis |
| Alcoholic hepatitis | Peritoneal tuberculosis |
| Cardiac failure | Nephrotic syndrome |
| Budd-Chiari syndrome | Serositis |
| Fulminant hepatic failure | Pancreatic / biliary ascites |

**Note**: The commonest cause of ascites is cirrhosis (90% of cases).

- serum-ascitic albumin gradient / SAAG (serum albumin value - ascitic fluid albumin value) correlates directly with portal pressure
- patients with SAAG = or > 11 g/l have portal hypertension (transudative ascites) while those with SAAG < 11 g/l do not (exudative ascites)
- the terms "exudate and transudate" are no longer used because SAAG is more accurate in classifying ascites

*VIP!*

SAAG < 11 g / l - nephrotic syndrome, malignancy and TB

*Ascitic fluid in diagnostic abdominal paracentesis*

| Investigations | Findings / interpretation |
|---|---|
| Macroscopic appearance | Straw-colored – cirrhosis, prehepatic obstruction (cardiac failure)<br>Bloody – malignancy<br>Turbid – infection<br>Milky – chylous ascites (trauma to cisterna chyli, malignancy) |
| Cell count and differential | > 500 polymorphs / ul – SBP<br>Lymphocyte predominance - tuberculosis |
| Gram stain / culture | Gram negative organism - SBP |
| SAAG | Discussed above |
| Amylase | > 500 IU/l - pancreatitis |
| Cytology | Malignancy |

*What is the prognostic significance of ascites in cirrhotics?*
- commonest sign of liver decompensation.
- poor prognostic sign - 50% of these patients die within two years.

*Management of ascites in chronic liver disease*
- low-salt diet.
- fluid restriction.
- diuretics - spironolactone.
- diuretic-resistant ascites:
  - large volume paracentesis.
  - transjugular intrahepatic portosystemic shunt (TIPSS).
  - peritoneojugular (LeVeen) shunt.
  - liver transplantation.

*VIP!*

Spontaneous bacterial peritonitis:
- ascitic polymorphs count > 500 cells / ul
- a poor prognostic sign

**Spontaneous bacterial peritonitis (SBP)**
- usually occurs in the advanced stage of cirrhosis
- features - fever, abdominal pain, ↓ bowel sound, altered mental status
- diagnosis - ↑ ascitic **polymorphs count (> 500 cells / ul) in the absence of** a local infectious source (e.g. perforated viscus)
- treatment - third generation cephalosporin*
- poor prognostic sign**

*most cases of SBP are caused by Gram negative enteric bacteria (*E. coli*, Klebsiella).
**among those who survive the first episode of SBP, less than one-third survive another year.

*Hello brother.....*

*The greatest personal limitation is to be found not in the things you want to do and can't....,*

*but in the things you've never considered doing*

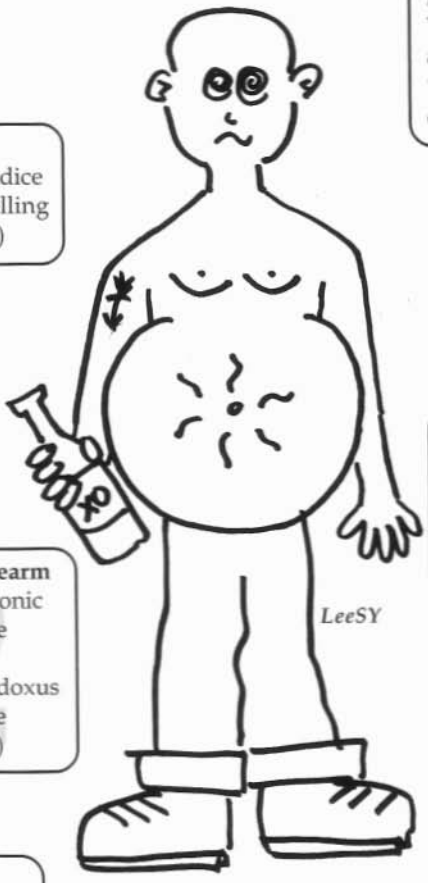
- Richard Bandler

A hypochondriac is one who has a pill for everything except what ails him - Mignon McLaughlin

# ASCITES

"This gentleman has abdominal distension - examine him."

*Look for chronic liver disease and portal hypertension!*




**Face**
Sclera - jaundice
Parotid swelling (alcoholism)

**Neck**
Virchow's node (upper abdominal malignancy)
↑ JVP (cardiac failure, constrictive pericarditis)

**Chest**
Gallop rhythm (cardiac failure)

**Abdomen**
Caput Medusae
Upward draining superficial veins (BCS* / IVC obstruction**)
Sister Mary Joseph nodule$^{\Psi}$
Tender hepatomegaly (cardiac failure, BCS)
Hard, irregular liver with bruit (malignancy)
Shifting dullness

**Hands / forearm**
Signs of chronic liver disease
Tattoo
Pulsus paradoxus (constrictive pericarditis)

**General inspection**
Jaundice
Malnourished

**Legs**
Edema

**Excuse me Sir, I would like to complete my examination by checking the following:**
Testicular atrophy
Per rectal examination - malignancy
Urine protein (nephrotic syndrome)

*Budd-Chiari syndrome - obstruction of hepatic vein.
**inferior vena cava.
$^{\Psi}$a firm nodule in the umbilicus suggestive of peritoneal carcinomatosis (gastric, pancreatic and hepatic malignancy).

# SECTION 3

# CHAPTER 8 – INFECTIOUS DISEASE

## CASE 46 HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION ★★

- causes progressive loss of immune function that predisposes to opportunistic infections (OIs) and non-infectious complications (malignancy, wasting syndrome, HIV dementia).
- is a common exam case because of it affects many systems in the body.

*Diagnosis of HIV infection*
- repeatedly positive HIV antibody test (ELISA) followed by a positive Western blot

*Diagnosis of AIDS*
- **symptomatic**: 23 AIDS-defining diseases (cerebral Toxoplasmosis, TB (any site), extrapulmonary Cryptococcosis, CMV retinitis, KS, PCP, etc.
- **asymptomatic**: CD4 count < 200 cells or CD4 percentage < 14

*VIP!*

Diagnosis of AIDS - CD4 count < 200 cells / ul or the presence of an AIDS-defining illness

*Complications of HIV infection*
- remember that the specific complications can be predicted by knowing the stage of disease (i.e. the CD4 count).

| CD4 cell count | Organism | Common manifestations |
|---|---|---|
| > 500 (cells / ul) | HIV | Primary HIV infection<br>Persistent generalized lymphadenopathy<br>Aseptic meningitis |
| < 500 (cells / ul) | *Str. pneumoniae, H. influenzae*<br>*M. tuberculosis*<br>Candida species<br>HHV-8 (KSHV)<br>Varicella-zoster virus<br>Epstein-Barr virus | Community-acquired pneumonia<br>Pulmonary TB (PTB)<br>Oropharyngeal / vaginal Candidiasis<br>Kaposi's sarcoma (KS)<br>Shingles<br>Oral hairy leukoplakia (OHL)<br>Non-Hodgkin's lymphoma (NHL) |
| < 200 (cells / ul) | *Pneumocystis carinii* (PC)<br>Cryptosporidium | PC pneumonia (PCP)<br>Chronic diarrhea |
| < 100 (cells / ul) | *Toxoplasma gondii*<br>*Cryptococcus neoformans*<br>*M. tuberculosis*<br>*M. avium complex (MAIC)*<br>Cytomegalovirus (CMV) | Encephalitis<br>Meningitis<br>Disseminated TB<br>Disseminated *M. avium complex*<br>Retinitis, GIT disease, encephalitis |
| | HIV | Wasting syndrome, dementia, myelopathy |

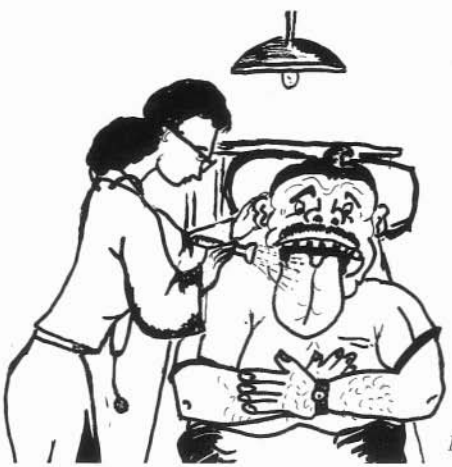
*a) Some oral complications of HIV infection*

| Disorders | Physical findings | Diagnosis | Treatment |
|---|---|---|---|
| Candidiasis | Palate, buccal mucosa, dorsal tongue<br>Creamy-white, **easily removed** plagues | Clinical | Fluconazole |
| OHL | Lateral tongue<br>Painless, white, **non-removable** lesion with corrugated surface | Clinical | Acyclovir / ganciclovir |
| KS (Fig. 46.1 – Section 2) | Palate and gingival<br>Bluish or purplish red macules, papules or nodules. | Biopsy | Radiation<br>Intralesional chemotherapy |

*b) Some central nervous system complications of HIV infection*

| Focal encephalopathy | Investigations / diagnosis | Treatment |
|---|---|---|
| Toxoplasmosis | Multiple ring-enhancing lesions at deep gray matter (basal ganglia)<br>Mass effect | Pyrimethamine and sulfadiazine |
| Primary CNS lymphoma | Single / multiple enhancing lesions at periventricular area and deep gray matter<br>Mass effect<br>Biopsy | Radiation<br>Steroid |
| Progressive multifocal leukoencephalopathy | Non-enhancing white matter lesions<br>No mass effect<br>CSF PCR for JC virus | Antiretroviral |
| **Diffuse encephalopathy** | | |
| Cryptococcal meningoencephalitis* | CSF – Indian Ink / Latex Ag | Amphotericin |
| Tuberculous meningoencephalitis | CSF – PCR for TB | Isoniazid / rifampicin |
| Viral encephalitis | CSF – viral serology | Acyclovir |
| HIV dementia | By exclusion | Antiretroviral |

*more often presents as chronic meningitis - headache without altered conscious level.



*Children.....*

*Always examine the oral cavity of any HIV patient!*

*MartinA*

*c) Some dermatological complications of HIV infection*

| Disorders | Physical findings | Diagnosis | Treatment |
|---|---|---|---|
| Herpes simplex | Blisters / ulcers<br>Oral, genital, rectal | Tzanck smear (multinucleated epithelial giant cells)<br>Skin biopsy | Acyclovir |
| Varicella-zoster | Blisters, dermatomal | Clinical | Acyclovir |
| Histoplasmosis | Erythematous macules / papules, pustules | Skin biopsy | Amphotericin |
| Seborrheic dermatitis | Faint pink patches with waxy scales<br>Scalp, face, axilla, groin | Clinical | Topical steroid plus ketoconazole cream |

*d) Some retinal complications of HIV infection*

| Retinal disorders | Fundoscopic appearance | Diagnosis | Treatment |
|---|---|---|---|
| HIV retinopathy | Cotton wool exudates, hemorrhages, microaneurysms<br>Lack of progression | Clinical | None – tend to resolve spontaneously |
| CMV retinitis | Multiple granular, white dots with hemorrhages<br>Follows vascular arcades, resulting in triangular area of infection<br>Progressively enlarge | Clinical | Ganciclovir |
| Toxoplasma retinochoroiditis | Whitening of retina<br>Relative absence of hemorrhages<br>Vitritis | Clinical | Pyrimethamine and sulfadiazine |

*e) Some causes of lymphadenopathy in HIV infection*

- persistent generalized lymphadenopathy.
- tuberculous lymphadenitis.
- lymphoma, fungal infection.

*VIP!*

Consider HIV infection in - **respiratory** (pneumonia, TB), **focal neurological** (Toxoplasmosis) and **cardiac** (IVDU with infective endocarditis) disorders

*Investigation of HIV infection*

*a) HIV-specific baseline tests*

- CD4 lymphocyte count and percentage.
- quantitative HIV RNA testing for viral load assessment.

*b) General laboratory tests*

- serology - syphilis, toxoplasmosis, viral hepatitis, CMV.
- cervical Pap smear - cervical malignancy.
- chest Xray.

*What is the significance of CD4 count?*

- indicator of the **stage of disease.**
- predictor of OIs and malignancy.

- helps in making decision on primary prophylaxis againts OIs and starting antiretroviral therapy.

*What is the significance of viral load?*

- indicator of the **rate of disease progression**.
- complements the CD4 count in monitoring antiretroviral therapy and prognostication.

*Specific treatment of HIV infection*

- HAART - combination of protease inhibitors, nucleoside reverse transcriptase inhibitors (NRTI) and non-NRTI.
- primary prophylaxis against OIs:

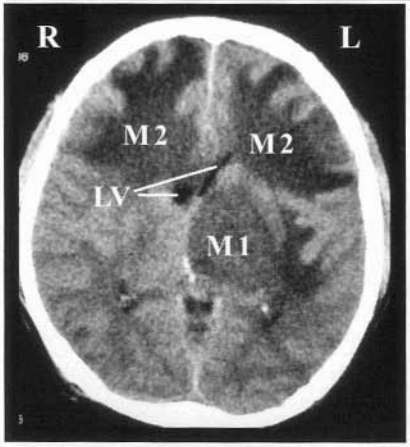
**Indications for HAART**

- symptomatic patients (regardless of CD4 count or viral load)
- asymptomatic patients* with CD4 count < 200 cells / ul (regardless of viral load)

| Pathogen | CD4 count (cells / ul) | Drug |
|---|---|---|
| *Pneumocystis carini* | < 200 | Trimethoprim-sulphamethoxazole |
| *Toxoplasma gondii* | < 100 | Trimethoprim-sulphamethoxazole |
| *M. avium complex* | < 50 | Azithromycin |
| *M. tuberculosis* | Any (positive tuberculin test or history of exposure) | Isoniazid |
| *Str. pneumoniae* | Any | Pneumococcal vaccine |
| Hepatitis A or B | Any | Hepatitis A and B vaccine |

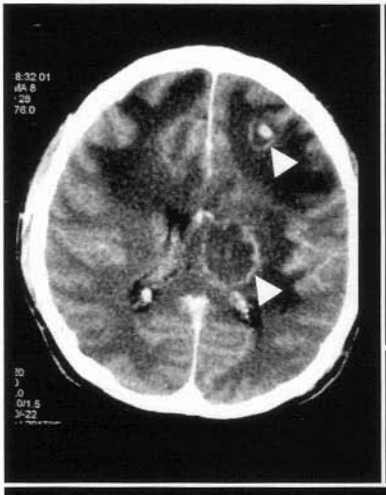
*the decision to treat asymptomatic patients with CD4 count > 200 cells / ul should be made after considering the viral load and personal choice.

## CASE REPORTS




**PATIENT 1** This travelling businessman presented with gradual onset of right hemiparesis for five days. **Findings**: Whitish oral lesions (Fig. 46.2 - Section 2) which ***could be removed using a spatula***. **Investigations**: CD4 count 90 cells / ul, CT brain - Fig. 46.3-4, HIV antibody (ELISA) - positive. **Diagnosis**: *Cerebral Toxoplasmosis and oral Candidiasis with underlying AIDS.* **Progress**: He responded well to pyrimethamine / sulfadiazine.

**Fig. 46.3** CT brain - multiple hypodense areas (indicating cerebral edema) at the left basal ganglia (M1) and both frontal lobes (M2). Note the mass effect as evident by the compression of both lateral ventricles (LV).



**Comments**: With the advent of HAARTs, the **incidence of Toxoplasmosis has significantly declined**. Thus, the most likely cause of focal neurological deficits and enhancing lesions on CT brain nowadays is **primary CNS lymphoma**. Ideally, the next step is brain biopsy. However, at centers where brain biopsy is not available, an empiric trial of pyrimethamine and sulfadiazine is useful.

**Fig. 46.4** CT brain (contrasted) showing two ring-enhancing lesions at the left basal ganglia and left frontal lobe (white arrowheads).

**PATIENT 2** HIV-infected man with acute onset of fever, purulent sputum and right pleuritic chest pain. **Findings**: Whitish oral lesions that ***could not be removed using a spatula*** (Fig. 46.5 - Section 2). Lungs - right middle zone consolidation. **Investigations**: Chest Xray - Fig. 46.6, CD4 count 320 cells / ul, blood culture - *Str. pneumoniae*. **Diagnosis**: *Pneumococcal pneumonia and oral hairy leukoplakia with underlying AIDS.*

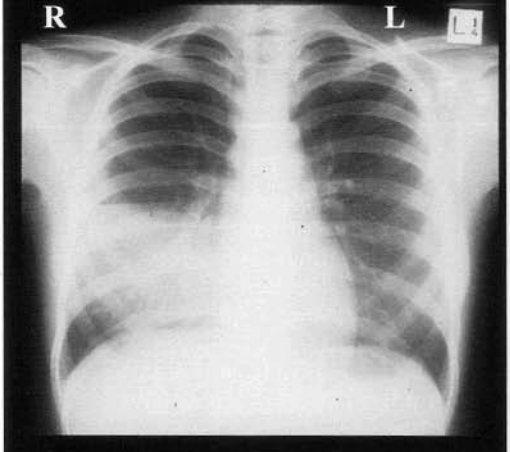



**Fig. 46.6** Chest Xray showing right middle lobe consolidation (loss of right heart border).

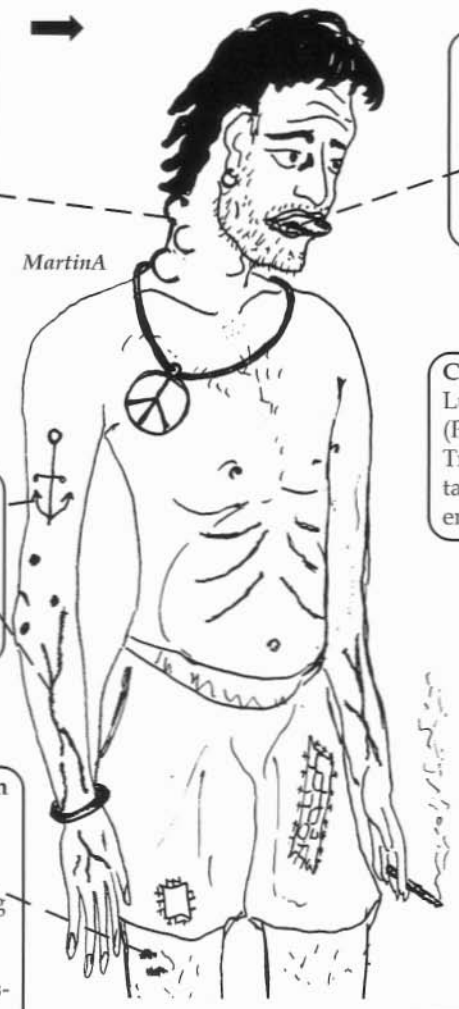
**Comments**: The commonest causes of HIV-related acute respiratory distress are bacterial pneumonia and PCP. The features of bacterial pneumonia are - acute symptoms (3-5 days), chills or rigors, pleuritic chest pain, productive cough with purulent sputum, focal signs in the lungs and **CD4 count < 500 cells / ul.** The features of PCP are - absence of purulent sputum, symptoms lasting a few weeks, absence of focal signs in the lungs and **CD4 cell count < 200 cells / ul.**

# HIV INFECTION

"Examine this patient's respiratory / neurological / cardiovascular system"

**Head / neck**
Sinus tenderness (sinusitis)
Fundus (CMV retinitis, Toxoplasmosis scar, soft exudates)
*Cervical lymph nodes*

**Mouth**
Candidiasis
Herpetic lesions
Aphthous ulcer
*OHL*
KS
Gingivitis




**Chest**
Lung crackles (PCP, TB)
Tricuspid regurgitation (infective endocarditis)

**Hands / arm**
*Tattoo*
*Injection mark* (drug abuser)
Onycholysis (fungal infection)

**Abdomen**
Hepatosplenomegaly (fungal, Mycobacterium, lymphoma)
Inguinal lymph nodes

**General inspection**
*Skin rash* (herpes, varicella-zoster, warts, KS, etc)
Nutrition (wasting syndrome)
Hemiparesis (cerebral Toxoplasmosis)

**Legs**
Proximal myopathy
Areflexia (peripheral neuropathy)
Upgoing plantars (intracranial mass, myelopathy)

**Excuse me Sir, I would like to complete my examination by checking the following:)**
Genitalia (herpes simplex, warts, discharge)
Rectal ulcer (herpes simplex), fever
Mental status: depression, dementia

The faults of others is easily perceived, but that of oneself is difficult to perceive - Bhagavad Gita

# SECTION 3

# CHAPTER 9 – CARDIOLOGY

# CARDIOVASCULAR EXAMINATION



corneal arcus
xanthoma

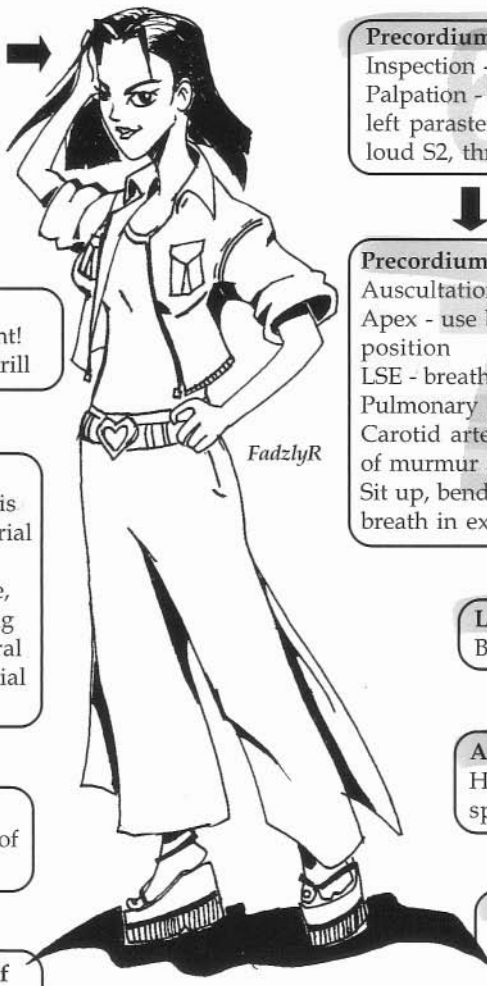
**Face**
Central cyanosis
Polycythemia
Oral cavity - dental hygiene, signs of HIV infection

**Neck**
JVP - use torchlight!
Palpate carotid thrill

**Hands**
Clubbing, cyanosis
Stigmata of bacterial endocarditis
Radial pulse - rate, rhythm, collapsing pulse, radiofemoral delay*, radial-radial delay

**Position**
Prop up the head of bed to 45 degrees

**Introduce yourself**
Shake the patient's hand




deformity
parasternal heave
cardiac impulse

**Precordium**
Inspection - surgical scar
Palpation - apex beat, left parasternal heave, loud S2, thrill

**Precordium**
Auscultation**;
Apex - use bell, left lateral position
LSE - breath in (TR)
Pulmonary / aortic area
Carotid artery - radiation of murmur (AS)
Sit up, bend forward, hold breath in expiration (AR)

**Lungs**
Basal crackles

**Abdomen**
Hepato- / splenomegaly

**Legs**
Ankle edema

**Excuse me Sir, I would like to complete my examination by checking the:**
Fever chart, urine - haematuria
Fundus, blood pressure

Peripheral pulses

*do not postpone this till the end of examination - you will forget about it.
**everytime you auscultate, your left thumb should be on the carotid pulse.

## CASE 47 EISENMENGER'S SYNDROME (ES)

- a condition whereby a large left-to-right shunt (ventricular septal defect / VSD, atrial septal defect / ASD or with a patent ductus arteriosus / PDA) causes severe pulmonary vascular disease and pulmonary hypertension → leading to reversal of the direction of shunting → cyanosis (Fig. 47.1-2 - Section 2).

*Complications of ES*

- **hyperviscosity symptoms** (headache, dizziness, visual disturbance) - due to polycythemia
- **hemoptysis** - due to pulmonary infarction or rupture of pulmonary arterioles / arteries
- **cerebral infarction**- due to paradoxical embolism and venous thrombosis
- **cerebral abscess**
- **syncope** - due to ↓ cardiac output and atrial fibrillation
- **right heart failure**
- **sudden death** (cardiac arrhythmia)

*Investigation of ES*

- full blood count / hematocrit - degree of secondary polycythemia.
- ECG - right ventricular hypertrophy, atrial fibrillation.
- Chest Xray:
  - prominent central pulmonary arteries
  - reduced markings ("pruning") of peripheral vessels
  - right ventricular enlargement in ASD (nornal heart size in PDA and VSD).
- Echocardiography - shunt, increased right ventricular pressure.
- Cardiac catheterization with pulmonary vasodilator (oxygen or nitric oxide) - assess reversibility of pulmonary hypertension (reversibility suggests benefit from surgical repair of defect).

*Management of ES*

- avoid volume depletion / vasodilator / pregnancy.
- intravenous epoprostenol (pulmonary vasodilator).
- venesection for symptoms of hyperviscosity.
- combined heart-lung transplantation.

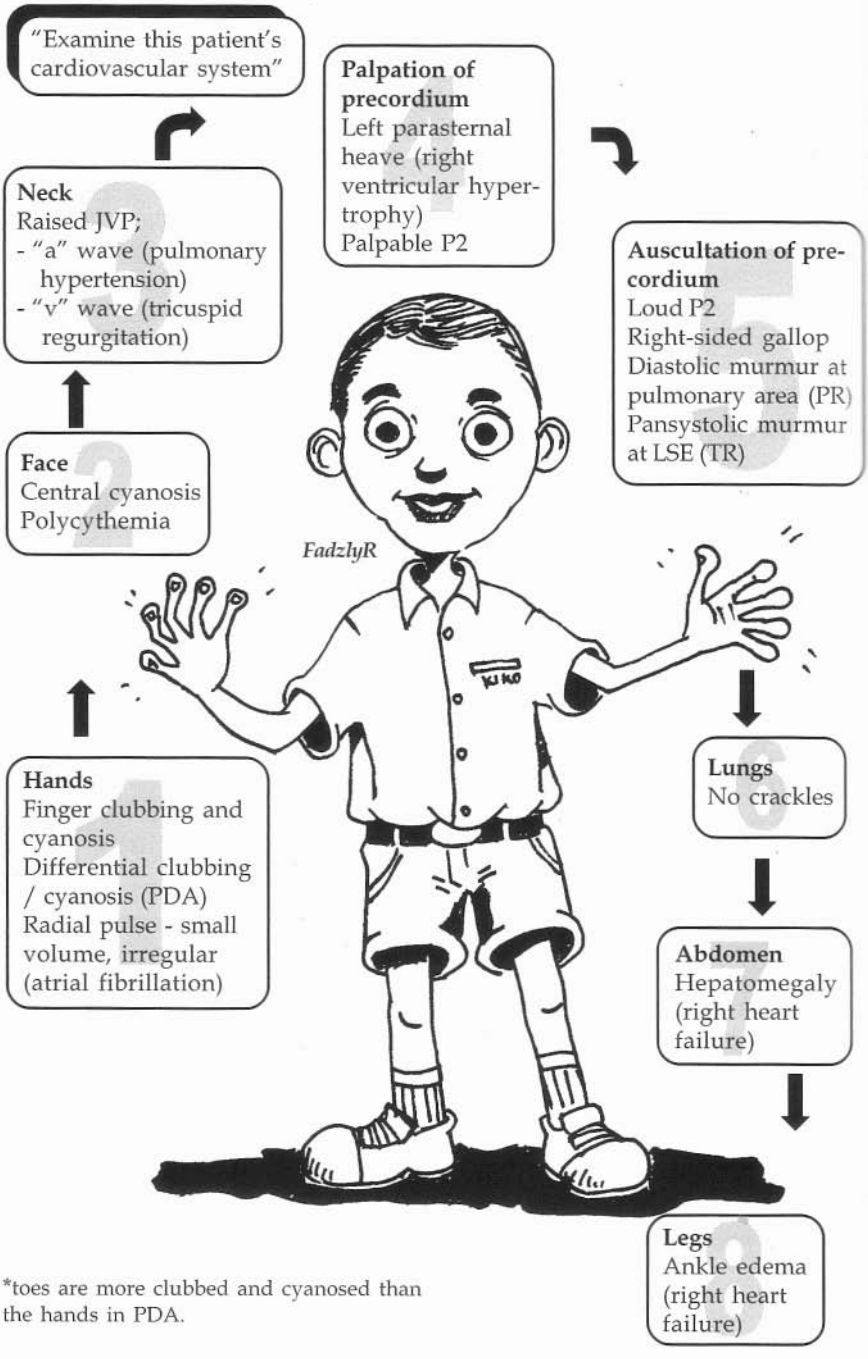
*VIP!*

The murmurs of ASD, VSD and PDA disappear when ES develops



Beware of the young doctor and the old barber - Benjamin Franklin

# EISENMENGER'S SYNDROME




*toes are more clubbed and cyanosed than the hands in PDA.

## CASE 48 INFECTIVE ENDOCARDITIS (IE) ★★

**Predisposing factors for IE**
- intravenous drug use (IVDU).
- prosthetic valve.
- chronic rheumatic valvular disease.
- mitral valve prolapse.
- nosochomial infection (intravenous line).

*VIP!* **Mitral valve prolapse** is the commonest predisposing cardiac lesion in native valve endocarditis

**Common pathogens in IE**
- *S. aureus*, Str. viridans, Str. fecalis,* fungi.

*has become an increasingly common cause of IE.

**Clinical features of IE**
- *extracardiac*

a) systemic symptoms - fever, anorexia, weight loss, arthralgia.
b) peripheral stigmata:

- splinter hemorrhages
- finger clubbing
- splenomegaly (mild)
- Roth's spot - central pale area with surrounding hemorrhage (Fig. 48.1 - Section 2)
- Osler's node - **tender nodules** on the finger pulp
- Janeway lesion - **non-tender hemorrhagic macules** on the palms and soles

- *cardiac* - changing cardiac murmur, cardiac failure, pericardial rub.

**Complications of IE**
- cardiac - congestive cardiac failure (infection-induced valvular damage), perivalvular extension of infection (new-onset bundle branch block or atrioventricular block).
- neurological - stroke due to cerebral infarction (embolism) or hemorrhage (rupture of mycotic aneurysm), cerebral abscess (cyanotic congenital heart disease with paradoxical embolism).
- systemic embolism with abscess formation - spleen, liver, kidney.

**Investigation of IE**
- full blood count (normocytic, normochromic anemia, leukocytosis).
- ESR.
- urine - microscopic hematuria.
- blood culture - three samples from different sites in 24 hours.
- Echocardiography (transthoracic / transesophageal) - vegetations.

**Causes of culture-negative endocarditis**

- prior antibiotic treatment.
- fastidious organisms - HACEK organisms (Hemophilus, Actinobacillus, Cardiobacterium, Eikenella and Kingella), fungi, *Coxiella burnetii.*
- right-sided endocarditis.
- sampling error (culture taken during abacteremic phase).

*VIP!* Diagnosis of IE depends on a constellation of clinical, laboratory and imaging findings

**Antibiotic treatment of IE** (duration of 4-6 weeks)

- Streptococci - penicillin G and gentamycin.
- Staphylococci - cloxacillin or vancomycin ± gentamycin.
- culture-negative native valve IE - penicillin G + gentamycin.

**Some indications for surgical treatment in IE**

- persistent bacteremia or fever despite optimal antibiotic therapy.
- extensive valve ring infection.
- prosthetic valve endocarditis - especially *S. aureus.*
- recurrent episodes of systemic embolism.

## CASE REPORT

A 23-year-old man, with no obvious risk factors for IE, presented with acute onset of septic shock. **Findings**: Janeway lesions on palms and soles, digital infarcts (Fig. 48.2-3 - Section 2), PSM at the mitral area, splenomegaly. **Investigation**: Echocardiography - mitral valve vegetation, CT abdomen (Fig. 48.4) - splenic abscess, blood culture - *S. aureus (SA).* **Diagnosis**: *IE due to SA.*

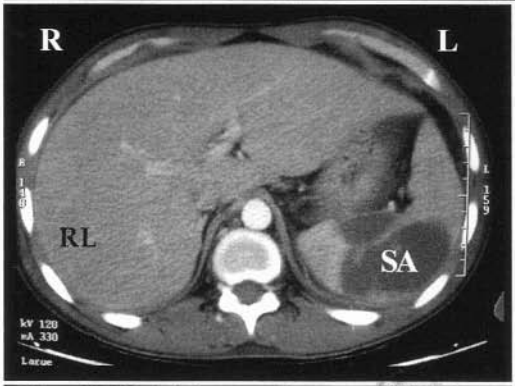
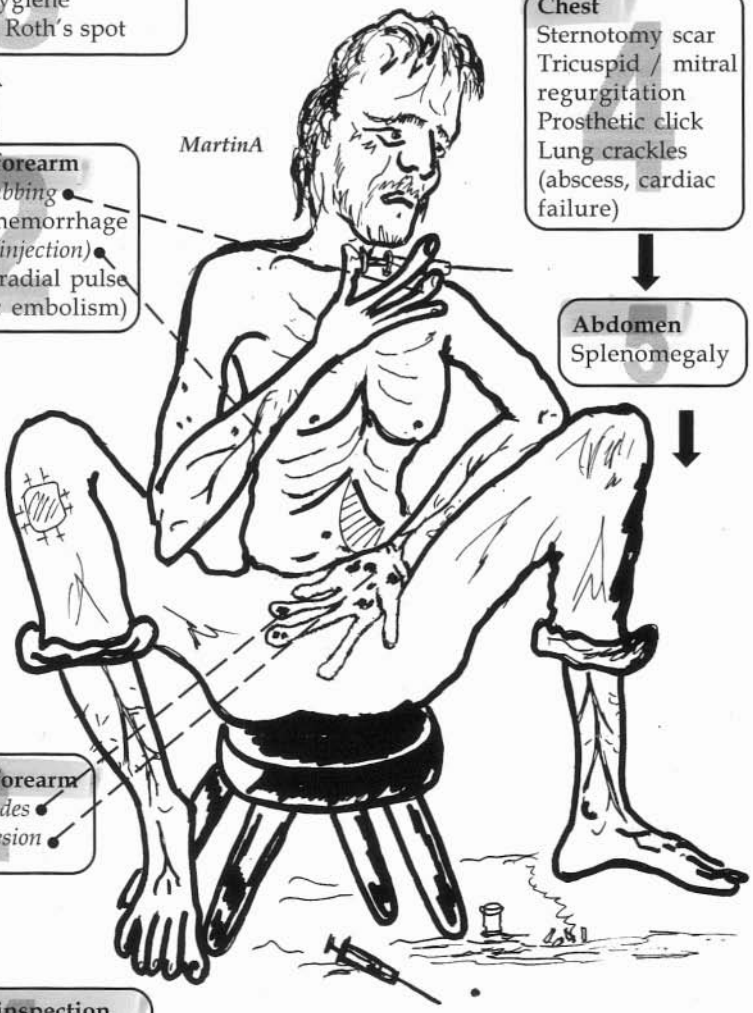



**Fig. 48.4** CT abdomen showing multiple hypodense areas in the spleen suggestive of abscess (SA). RL = right lobe of liver.

**Comments**: The peripheral signs of IE are due to either septic emboli or immune complexes. They are not seen with isolated right-sided IE. With the earlier presentation to hospitals and antibiotic treatment, the peripheral signs of IE are uncommon nowadays.

IE due to SA usually affects the tricuspid valve, and occasionally the mitral and aortic valves.

# INFECTIVE ENDOCARDITIS




*VIP!* **Tricuspid regurgitation** - suspect IE due to IVDU (*S. aureus*)

**Face / eyes**
Subconjunctival petechia
Conjunctival pallor
Dental hygiene
Fundus - Roth's spot

**Chest**
Sternotomy scar
Tricuspid / mitral regurgitation
Prosthetic click
Lung crackles (abscess, cardiac failure)

**Hands / forearm**
*Finger clubbing*
Splinter hemorrhage
*Phlebitis (injection)*
Unequal radial pulse (systemic embolism)

**Abdomen**
Splenomegaly

**Hands / forearm**
*Osler's nodes*
*Janeway lesion*

**General inspection**
Unkempt
Malnourished
Hemiparesis (embolic stroke)

**Excuse me Sir, I would like to complete my examination by checking the:**
Temperature chart
Urine - haematuria



Happiness is not a state to arrive at, but a manner of traveling - Margoret Lee Runbeck

# CASE 49 CARDIAC MURMUR ★★★

- in evaluating cardiac murmur, the following should be considered:
  - the ***anatomical defect*** (**SCRIPT**): *(Khan J)*
    **S**ite
    **C**haracter (harsh, blowing, rough)
    **R**adiation
    **I**ntensity
    **P**itch
    **T**iming
  - the ***underlying etiology***
  - the ***severity*** of the cardiac defect (for surgical consideration)

Abbreviations:

AS = aortic stenosis
AR = aortic regurgitation
ASD = atrial septal defect
CM = continuous murmur
DM = diastolic murmur
EDM = early diastolic murmur
ESM = ejection systolic murmur
HCM = hypertrophic cardiomyopathy
ICS = intercostal space
JVP = jugular venous pulsation
LICS = left intercostal space
LSE = left sternal edge
LVF = left ventricular failure
MDM = mid-diastolic murmur
MR = mitral regurgitation
MS = mitral stenosis
OS = opening snap
PDA = patent ductus arteriosus
PH = pulmonary hypertension
PR = pulmonary regurgitation
PS = pulmonary stenosis
PSM = pansystolic murmur
RICS = right intercostal space
RSE = right sternal edge
S1 = first heart sound
S2 = second heart sound
TR = tricuspid regurgitation
VSD = ventricular septal defect

| PSM | Other features | Etiology |
|---|---|---|
| a) Apex | | |
| MR | Normal JVP<br>Apical thrill<br>Murmur:<br>- blowing, high-pitched<br>- plateau-shaped<br>- radiates to axilla<br>- **↓ with inspiration** | Acute – papillary muscle rupture (acute myocardial infarct)<br>Chronic - mitral valve prolapse, rheumatic heart disease, infective endocarditis, ischemic heart disease, left ventricular dilatation |
| b) 4LICS | | |
| VSD | JVP – normal or ↑ ("a" wave in PH)<br>Thrill at 4LICS<br>Murmur:<br>- harsh, plateau-shaped<br>- radiates to RSE<br>- **unchanged with inspiration** | Congenital<br>Rupture of interventricular septum (acute myocardial infarct) |
| TR | ↑ JVP ("v" wave)<br>Pulsatile liver<br>Thrill at LSE<br>Murmur:<br>- similar to MR but radiates to xiphoid<br>- **↑ with inspiration** | PH<br>Rheumatic<br>Right-sided endocarditis (drug abusers) |


*Look for raised JVP ("v" wave) in TR!*

**Innocent murmur:** *VIP!*
**S**ystolic ejection murmur
**S**hort duration (< 50% of systole)
**S**oft
**S**upine position - best heard
**S**atisfactory ECG & CXR
**S**ingle S2 *(Jaradat Z)*

| ESM at 2LICS | Other features | Etiology |
|---|---|---|
| Pulmonary flow murmur | Young people<br>No thrill<br>Murmur:<br>- soft, high-pitched, short<br>- ↑ **at supine position**<br>- ↓ **at upright position**<br>**Normal splitting of S2** | Innocent murmur$^{\Psi}$ |
| PS | Young people<br>Thrill<br>Murmur: harsh, crescendo-decrescendo<br>**Wide splitting of S2** | Congenital |
| Flow murmur of ASD | Young people<br>No thrill<br>Murmur – medium-pitched, short<br>**Fixed splitting of S2** | Congenital |
| **ESM at 2RICS** | | |
| AS | Youth<br>**Pulsus *parvus et tardus*** (slow-rising pulse)<br>Thrill at aortic area and carotid artery<br>Harsh murmur that radiates up to carotid artery | Congenital<br>Rheumatic |
| HCM | Young adults<br>Normal or jerky arterial pulse<br>Sustained apical heave<br>Thrill at LSE or apex, S4<br>Murmur: maximal at LSE or apex (may be PSM at the apex | |
| Aortic sclerosis* | Middle age and elderly<br>**Normal arterial pulse** and pulse pressure<br>No thrill or S4<br>Murmur: rough, minimal radiation to carotid artery | Degenerative process |

$^{\Psi}$occurrence of a murmur without any structural heart disease.

*degenerative calcification of aortic valve that results in thickening of the valve but without significant obstruction of outflow or hemodynamic disturbance: there are no peripheral signs of AS in aortic sclerosis.

A natural death is where you die by yourself without a doctor's help - Anonymous

| DM | Other features | Etiology |
|---|---|---|
| *a) MDM at apex* | | |
| MS | Tapping apex beat (palpable S1)<br>Loud S1*<br>OS**<br>Murmur:<br>- rumbling, low-pitched<br>- presystolic accentuation*** | Rheumatic heart disease |
| Austin-Flint murmur | Absence of loud S1 and OS<br>Murmur - blowing | Fluttering of the anterior mitral valve leaflet in AR |
| *b) EDM at LSE* | | |
| AR | Peripheral signs (see the following section)<br>Murmur:<br>- blowing, decrescendo<br>- high-pitched<br>- best heard with patient seated, leaning forward and **breath held in expiration** | Acute – infective endocarditis, dissection of aorta<br>Chronic - rheumatic heart disease, Marfan's syndrome, ankylosing spondylitis |
| PR (Graham Steell murmur) | Murmur:<br>- blowing, decrescendo<br>- high-pitched<br>- ↑ **during inspiration**<br>Loud S2 | PH |

*the mitral valve is held open by the greatly raised left atrial pressure until the force of the ventricular systole closes the valve.
**the high left atrial pressure forces the valve cusps apart but the valve cone is halted abruptly; OS indicates mobile valve cusps.
***caused by left atrial systole - absent when atrial fibrillation has occurred.

### ♣ Peripheral signs of AR

- *Quincke's sign* - systolic plethora and diastolic blanching in the nail bed when gentle pressure is placed on it
- *Corrigan's sign* - prominent pulsation of the carotid artery
- *de Musset's sign* - head nodding that is synchronized with the heart beat
- *Muller's sign* - systolic pulsations of the uvula
- *"Pistol-shot" sound* - systolic "booming" sound heard in the femoral artery
- *Duroziez's sign* - diastolic murmur heard in the femoral artery with finger compressing the artery distally

### *Some causes of continuous murmur*

- PDA - commonest.
- MR with AR.
- VSD with AR.
- rupture of sinus of Valsava.

*VIP!*

Remember:

r**I**ght-sided murmurs - louder with **I**nspiration
l**E**ft-sided murmurs - louder with **E**xpiration

## *Assessment of severity of valvular defects*

| Valvular defect | Clinical findings | Echocardiographic findings |
|---|---|---|
| AS | **Anacrotic pulse*** | Valve gradient > 50 mm Hg, valve area < 0.8 $cm^2$ |
| | **Narrow pulse pressure** | |
| | Thrill | |
| | S4 | |
| | Long and late-peaking ESM** | |
| | Signs of LVF | |
| AR | **Wide pulse pressure** | |
| | Long duration of the EDM | |
| | S3 | |
| | Austin Flint murmur | |
| | Signs of LVF | |
| MS | **Closeness of OS to S2** (due to raised left atrial pressure) | Valve area < 1 $cm^2$ |
| | Long duration of MDM | |
| | Loud S2 (signs of PH) | |
| MR | Left ventricular enlargement (**displaced apex beat**) | |
| | S3 | |
| | Signs of LVF | |

*a variant of pulsus *parvus et tardus* in which a notch is palpable on the upstroke of the pulse wave.

**the loudness of murmur does not correlate with severity of AS - in severe AS, the murmur may be soft due to LVF while in mild AS, the murmur may be loud.

## *Signs of dominance in mixed mitral valve disease*

| Features | Dominant MS | Dominant MR |
|---|---|---|
| Apex beat | Tapping, not displaced | Heaving and displaced |
| S1 | Loud | Soft |
| S3 | Absent | Present |

## *Signs of dominance in mixed aortic valve disease*

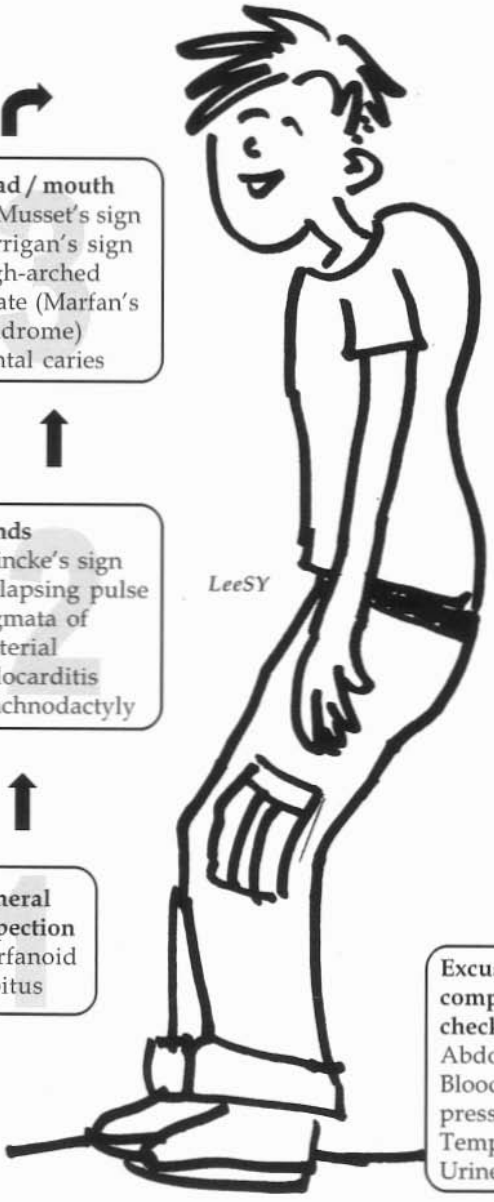
| Features | Dominant AS | Dominant AR |
|---|---|---|
| Apex beat | Not displaced | Displaced |
| Pulse volume | Small | Collapsing |
| Pulse pressure | Small | Wide |

*VIP!*

**PSM**: apex - MR
LSE - VSD, TR
**ESM** at 2LICS - innocent murmur, ASD, PS
**ESM** at 2RICS - AS, HCM, aortic sclerosis
**MDM** at apex - MS
**EDM** at LSE - AR, PR
**CM** - PDA

# AORTIC REGURGITATION (AR)

*Look for etiology and complications of AR!*




**Eyes**
Lens subluxation
Argyll-Robertson pupil (rare)
Uveitis (ankylosing spondylitis)
Fundus - Roth's spot

**Chest**
EDM of AR
Austin-Flint murmur
Basal crackles - LVF

**Spine**
Kyphoscoliosis (Marfan's syndrome)
Sacroiliac tenderness, reduced spinal mobility (ankylosing spondylitis)

**Femoral artery**
"Pistol-shot" sound
Duroziez's sign

**Excuse me Sir, I would like to complete my examination by checking the:**
Abdomen - splenomegaly
Blood pressure - wide pulse pressure
Temperature chart
Urine - hematuria

**General inspection**
Marfanoid habitus

**Hands**
Quincke's sign
Collapsing pulse
Stigmata of bacterial endocarditis
Arachnodactyly

**Head / mouth**
de Musset's sign
Corrigan's sign
High-arched palate (Marfan's syndrome)
Dental caries

## CASE 50 HYPERTENSION



*Causes of hypertension*

- Idiopathic (essential hypertension - 90% of cases)
- CNS disorders (Cushing's reflex)
- High-output states
- Endocrine disorders - Cushing's syndrome, acromegaly, thyrotoxicosis, Conn's syndrome, pheochromocytoma
- Coarctation of aorta
- Kidney disease - renal artery stenosis, glomerulonephritis, chronic renal failure, polycystic kidney
- Acute stress
- Birth control pills and other drugs
- Pregnancy

*"I CHECK A BP"*

*(Donnelly TJ)*

*Complications of hypertension*

- neurological - stroke (cerebral infarction, hemorrhage), hypertensive encephalopathy, dementia.
- cardiac - ischemic heart disease, aortic aneurysm, dissecting aneurysm of aorta, left ventricular failure.
- retina - hypertensive retinopathy.
- renal - chronic renal failure, malignant hypertension.
- peripheral vascular disease.

*VIP!* Causes of hypertension: "I CHECK A BP"

*Investigation of hypertension*

- full blood count.
- urinalysis.
- fasting lipid profile.
- ECG - left ventricular hypertrophy.
- renal function, uric acid.
- electrolytes - hypokalemia (Conn's / Cushing's syndrome).
- Chest Xray.

*Additional investigation of young hypertension*

- 24-hours urinary vanillylmandelic acid - pheochromocytoma.
- renal angiogram - renal artery stenosis.
- hormonal tests - Cushing's / Conn's syndrome.

*Management of hypertension*

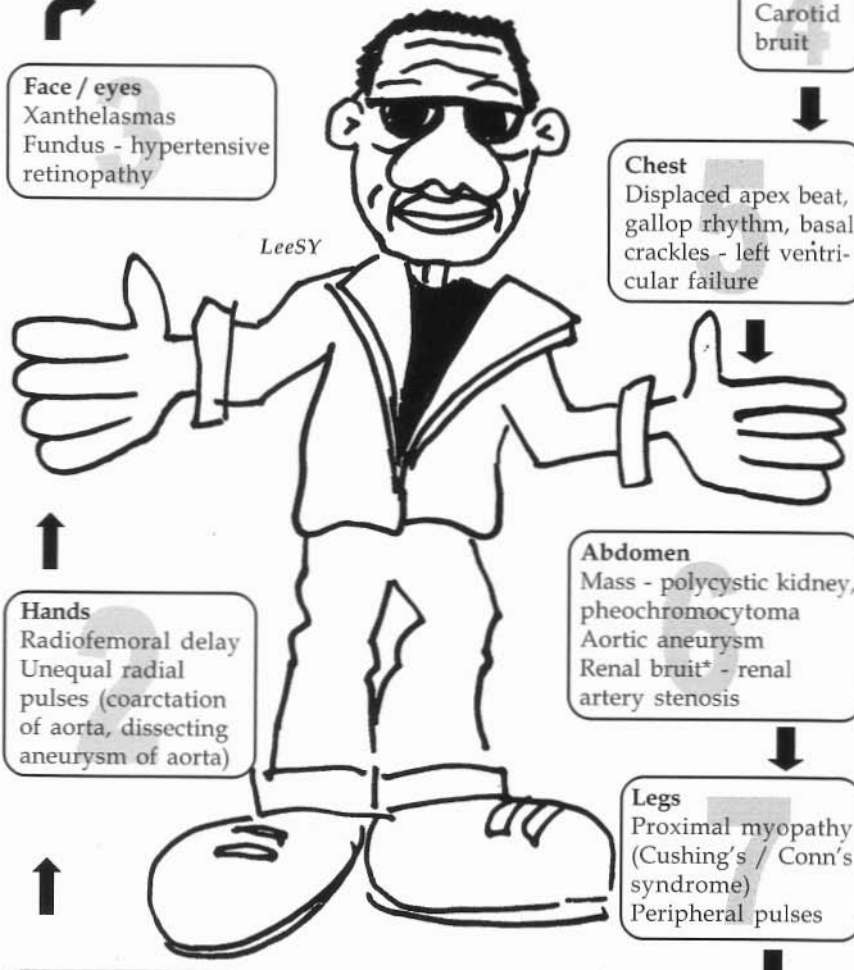
- general measures - low salt diet, weight reduction, stop smoking, reduce alcohol intake.
- specific treatment - thiazides, beta-blockers, ACE inhibitors.
- aim for: ≤ 140 mm Hg systolic blood pressure and ≤ 85 mm Hg diastolic blood pressure.

No one appears on our stage unless the director has placed them there for our benefit - Paramahansa Yogananda

# HYPERTENSION

"This patient is hypertensive - examine him"

*Look for etiology of hypertension, evidence of target organ damage and associated cardiovascular risk factors!*




**1 Neck**
Carotid bruit

**2 Face / eyes**
Xanthelasmas
Fundus - hypertensive retinopathy

**3 Chest**
Displaced apex beat, gallop rhythm, basal crackles - left ventricular failure

**4 Abdomen**
Mass - polycystic kidney, pheochromocytoma
Aortic aneurysm
Renal bruit* - renal artery stenosis

**5 Hands**
Radiofemoral delay
Unequal radial pulses (coarctation of aorta, dissecting aneurysm of aorta)

**6 Legs**
Proximal myopathy (Cushing's / Conn's syndrome)
Peripheral pulses

**7 General inspection**
Cushingoid
Acromegalic
Sallow (uremia)

**8 Excuse me Sir, I would like to complete my examination by checking the:**
Blood pressure - supine / standing**
Urinalysis - proteinuria
Family history of hypertension

*heard anteriorly over the epigastrium.
**a postural drop in blood pressure is characteristic of pheochromocytoma.

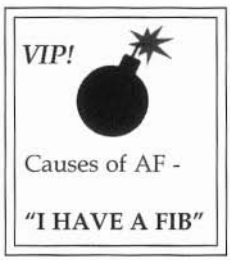
## CASE 51 ATRIAL FIBRILLATION (AF) ★★

*Causes of AF*

- Ischemic heart disease*, idopathic[£]
- Hyperthyroidism*
- Acute pericarditis
- Valvular heart disease (mitral stenosis)*
- Embolus (pulmonary)
- Atrial septal defect
- Failure (cardiac)
- Infection (pneumonia)
- Booze

*"I HAVE A FIB"*

*(Donnelly TJ)*

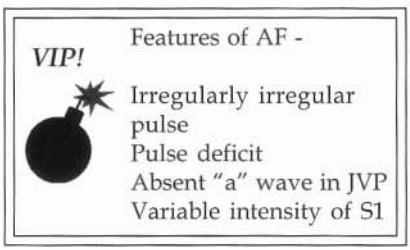



*common causes of AF.

[£]lone AF - occurrence of AF in the absence of cardiac disease or hypertension.

*Other causes of irregularly irregular radial pulse*

- multifocal ventricular ectopics.
- atrial flutter with varying block.




*Investigation of AF*

- thyroid function test.
- ECG - absent P waves, "f" waves.
- Echocardiography - valvular defects, left atrial thrombus, left atrial size.
- Holter monitoring - paroxysmal AF.

*Complications of AF*

- systemic thromboembolism - stroke.
- left ventricular failure (especially in fast AF) - the loss of left atrial systole ("kick"), which contributes 20% of the ventricular stroke volume, leads to raised left atrial pressure.
- exacerbation of angina.

*Management of AF*

- identify the underlying cause
- treat the arrhythmia
  - cardioversion (electrical or pharmacological)
  - if cardioversion not possible, control the ventricular rate (digoxin)
- prevention of thromboembolism - anticoagulation (aim for PT INR of 2.0 - 3.0)

The true laboratory is the mind, where behind illusions we uncover the laws of truth - J.C. Bose

# ATRIAL FIBRILLATION


*Look for etiology and complications of AF!*

**1 General inspection**
Anxious, thin, "stary" look (thyrotoxicosis)
Hemiparesis (embolic stroke)

**2 Hands**
Irregularly irregular pulse
Warm, sweaty palm

**3 Face / eyes**
Malar flush (mitral stenosis - rare)
Goiter
Exophthalmos

**4 Chest**
Mitral valvotomy scar
Murmur - mitral stenosis
Variable intensity of S1

**5 Excuse me Sir, I would like to complete my examination by checking the:**
Blood pressure - hypertension
AND asking for history of ischemic heart disease

# CASE 52 ANGINA ★★

*Clinical types of angina*

- *stable angina*
  - predictable angina that occurs on exertion or emotional stress.
  - **stable** atherosclerotic plague → fixed coronary stenosis.
- *unstable angina*
  - unpredictable: angina at rest, increasing angina, new-onset angina.
  - **unstable** atherosclerotic plague → rupture → fissuring → thrombus formation → subtotal occlusion of coronary artery.
- *Prinzmetal (variant) angina*
  - angina that occurs primarily at rest, due to coronary vasospasm.

*Risk factors for ischemic heart disease*

- hyperlipidemia.
- hypertension.
- cigarette smoking.
- diabetes mellitus.

*Some secondary causes of hyperlipidemia*

- diabetes mellitus.
- obstructive jaundice.
- hypothyroidism.
- nephrotic syndrome.

*Investigation of angina*

- full blood count - anemia exacerbates angina.
- lipid profile, glucose.
- cardiac enzymes - troponin T.
- ECG - ST and T wave changes.
- Echocardiography:
  - wall motion abnormalities (ischemia)
  - aortic stenosis and hypertrophic cardiomyopathy (may present with angina).
- coronary angiography - site and degree of stenosis.
- exercise stress test - > 1 mm of horizontal or downsloping ST segment depression.

*Xanthomas** in hyperlipidemia (Fig. 52.1-6 - Section 2)

↑ cholesterol
- xanthelasmas, tendinous xanthomas, tuberous xanthomas

↑ triglyceride
- eruptive xanthomas

↑ triglyceride + cholesterol (IDL)
- tuberous xanthomas

*accumulation of lipid-laden macrophages at the skin and tendon.

*Management of unstable angina*

- specific treatment - aspirin, clopidogrel, intravenous or low molecular weight heparin, beta-blocker, statins.
- treat aggravating factors - anemia, infection, thyrotoxicosis.
- if the above measures fail → coronary angioplasty.

# ANGINA

*Look for predisposing factors and complications!*


**1 General inspection**
Obesity
Tachypnea

**2 Face / eyes**
*Xanthelasmas*
Fundus - diabetic retinopathy

**3 Hands**
*Tuberous xanthomas*
Tendinous xanthomas
Nicotine staining

**4 Neck**
Carotid bruit (diffuse atheromatous disease)
JVP

**5 Chest**
S3* (↓ LV compliance)
PSM* (papillary muscle dysfunction)
ESM (aortic stenosis, hypertrophic cardiomyopathy)
Gallop rhythm, basal crackles (LVF)

**6 Legs**
Thickening of Achilles tendon
Dorsalis pedis (diffuse atheromatous disease)

**7 Excuse me Sir, I would like to complete my examination by checking the:**
Blood pressure - hyper- / hypotension
Blood glucose
Family history - ischemic heart disease, premature death

*these non-specific physical findings of angina are uncommon and tend to be found during the episodes of chest pain.

## CASE 53 ACUTE MYOCARDIAL INFARCTION (AMI) ★★

- pathophysiology is similar to unstable angina except that the thrombus causes total coronary occlusion → myocardial necrosis.

*Physical findings in AMI*

- in addition to the findings of angina, look for evidence of complications of AMI:

| Physical sign | Complication |
|---|---|
| Irregular radial pulse | Ventricular arrhythmia, heart block |
| Double apical impulse | Ventricular aneurysm |
| Pericardial rub | Pericarditis, Dressler's syndrome* |
| PSM at apex | Mitral regurgitation (papillary muscle dysfunction, rupture of chordae tendinae) |
| PSM at LSE | Ventricular septal rupture |

*pericarditis, pleurisy and fever that occur one to six weeks afer AMI. It is thought to be an autoimmune-mediated process.

*Diagnosis of AMI*

- ECG - ST elevation, Q wave, new-onset left bundle branch block.
- cardiac enzymes:
  - troponin is specific to cardiac muscle. As it is more specific and sensitive than CK-MB, it is useful in cases of skeletal muscle injury when CK-MB is raised without AMI.
  - a positive troponin test is diagnostic of AMI. Troponin T is measureable within 3-6 hours after AMI and remains elevated for up to two weeks.

*Acute specific treatment for AMI*

- aspirin 300 mg stat, followed by 150 mg daily.
- clopidogrel in cases of allergy or resistance to aspirin.
- reperfusion - thrombolysis (Streptokinase) or primary percutaneous transluminal coronary angioplasty.
- beta-blocker - reduces the rate of reinfarction and recurrent ischemia.
- ACE inhibitors - reduce overall cardiovascular mortality especially in patients with low ejection fraction and clinical evidence of left ventricular failure.

*Thrombolytic therapy in AMI*

- beneficial if given up to 12 hours after onset of chest pain.
- reduces size of infarct and mortality.

# CASE 54 PROSTHETIC HEART VALVE ★★★

*The types of prosthetic valves*

a) Mechanical valves - composed primarily of metal or carbon alloys
- caged-ball (e.g. Starr-Edwards).
- tilting-disk (e.g. Bjork-Shiley).

b) Bioprostheses
- heterograft - composed of porcine (e.g. Carpentier-Edwards) or bovine tissue (pericardial or valvular) mounted on a metal support.
- homograft - preserved human aortic valves.

*Auscultatory findings of prosthetic valves*

| Prosthetic valve | Aortic | | Mitral | |
|---|---|---|---|---|
| | *Normal finding* | *Abnormal finding* | *Normal finding* | *Abnormal finding* |
| Caged-ball | Click, ESM | Aortic DM | Click, ESM | Apical PSM |
| Tilting-disk | Click, ESM, DM | | Click, DM | Apical PSM |
| Heterograft prostheses | No click ESM | Aortic DM | No click ESM, DM | Apical PSM |

*Complications of prosthetic valves*
- valve dysfunction - leakage, dehiscence, obstruction due to thrombus.
- systemic thromboembolism - stroke.
- bleeding - warfarin.
- bacterial endocarditis.
- hemolysis.

*VIPs!*
- PSM in mitral valve prostheses and DM in aortic valve prostheses → **valve dysfunction**
- ↓ intensity of prosthetic click → **valve thrombosis**

*Anticoagulation for prosthetic valves*
- mechanical valve - requires long-term anticoagulation.
- heterograft bioprosthetic valve - requires low-intensity anticoagulation during the first three months after valve replacement (due to increased risk of thromboembolism during this period).
- homograft bioprosthetic valve - does not need anticoagulation.

*Choice of prosthetic valve*
- young patients or life expectancy > 10-15 years → mechanical valve (longer durability).
- elderly patients or life expectancy < 10-15 years or contraindication to anticoagulation → bioprosthetic valve (shorter durability).
- pregnancy → mechanical valve is recommended:
  a) risk of warfarin embryopathy is very low.
  b) bioprosthetic valve tend to degenerate during pregnancy - valve replacement in these patients has significant mortality rate.

## CASE REPORT

This 23-year-old lady presented with acute onset of dysphasia and right hemiparesis. She had defaulted warfarin therapy for mitral valve replacement. **Findings**: Global dysphasia and prosthetic click at mitral area. **Investigation**: Chest Xray - Fig. 54.1, CT brain - Fig. 54.2, Echocardiography - small thrombus on prosthetic valve. **Diagnosis**: *Stroke with dysphasia due to embolism (prosthetic valve thrombus).*

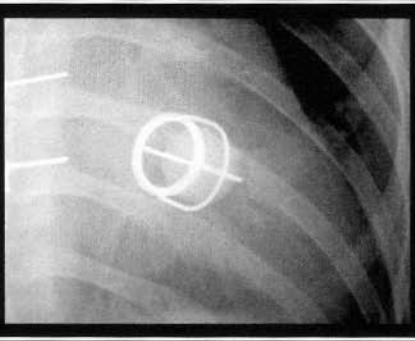


**Fig. 54.1** The Starr-Edwards "caged-ball" prosthetic valve (the ball is seen as a hyperdense rounded shadow within the "cage").

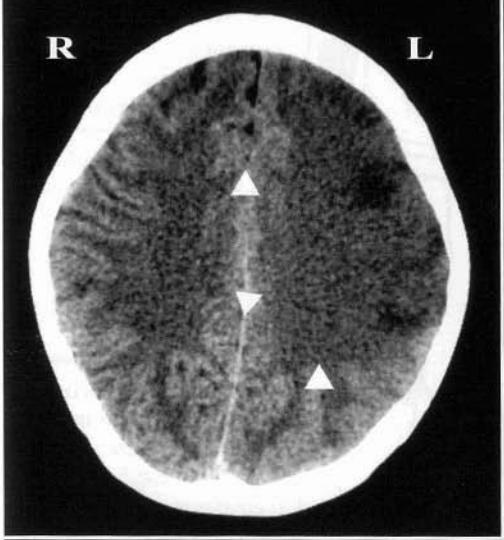


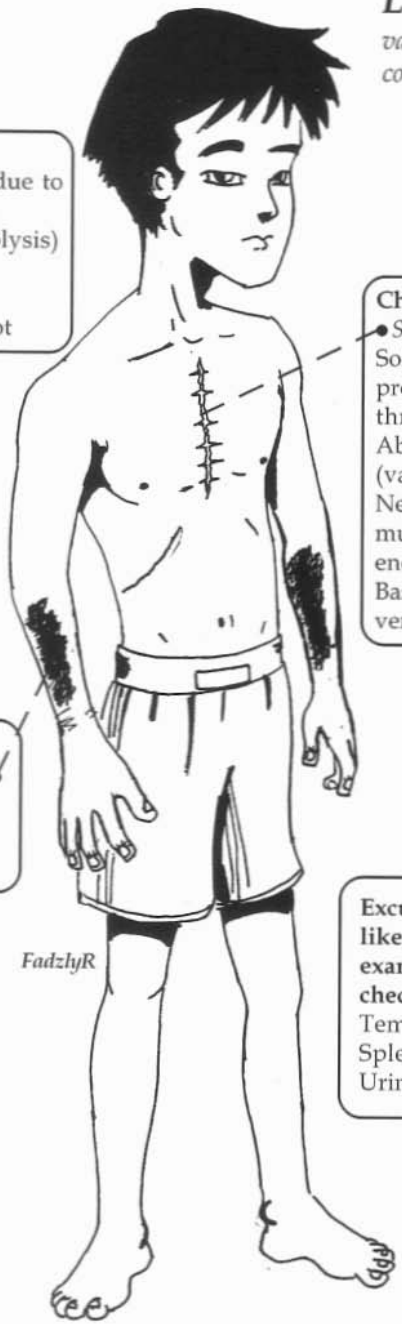

**Fig. 54.2** The early changes of MCA infarction (white arrowheads) - hypodensity, effacement of cerebral sulci and loss of gray-white matter junction at left frontoparietal regions.

**Comments**: In general, the risk of embolization is increased with mitral valve prostheses, caged-ball valves and multiple prosthetic valves. In this patient, the non-compliance with warfarin therapy is also a contributing factor. Majority of emboli due to prosthetic valves manifest as stroke.

It is also important to consider ***bacterial endocarditis*** in cases of systemic embolism due to prosthetic valves.

# PROSTHETIC HEART VALVE

*Look for prosthetic valve dysfunction and complications!*



**Face / eyes**
Anemia (bleeding due to warfarin, bacterial endocarditis, hemolysis)
Tinge of jaundice (hemolysis)
Fundus - Roth's spot

**Chest**
*Sternotomy scar*
Soft / absent prosthetic click - valve thrombosis
Abnormal murmurs (valve dysfunction)
New or changing murmur (bacterial endocarditis)
Basal crackles - left ventricular failure

**Hands / forearm**
*Purpura (warfarin)*
Stigmata of bacterial endocarditis

**General inspection**
Hemiparesis (embolic stroke)

**Excuse me Sir, I would like to complete my examination by checking the:**
Temperature
Splenomegaly
Urinalysis - hematuria

*FadzlyR*

# SECTION 3

# CHAPTER 10 – NEPHROLOGY

## CASE 55 CHRONIC RENAL FAILURE (CRF) ★★★

*Definitions*

- **Azotemia** - accumulation of nitrogenous products (chiefly urea) in the blood, as indicated by raised serum urea and creatinine
- **Uremia** - manifestations of organ dysfunction associated with azotemia
- **CRF** - permanent reduction in glomerular filtration rate* / GFR (5-25 ml/min) sufficient to produce detectable alterations in well-being and organ function
- **End stage renal failure** - the final stage of CRF (GFR < 5 ml/min) when patients cannot survive without transplantation or long term dialysis

*normal GFR, as measured by creatinine clearance, is 90-120 ml/min.

*Common causes of CRF*

- glomerulonephritis.
- diabetes mellitus.
- hypertension.
- pyelonephritis.
- polycystic kidney disease.
- drugs (analgesic nephropathy).

*Complications of CRF*

- Electrolyte - hyperkalemia, hypocalcemia, hyperphosphatemia.
- Cardiovascular - cardiac failure, hypertension, accelerated atherosclerosis, pericarditis.
- Hematological - anemia, bleeding tendency (platelet dysfunction).
- Neurological - drowsiness, seizure, peripheral neuropathy.
- Metabolic / endocrine - hyperlipidemia, renal osteodystrophy.
- Gastrointestinal - anorexia, nausea, vomiting, bleeding.
- Skin - pruritus**, pigmentation, easy bruising.

**caused by calcium deposition (secondary hyperparathyroidism).

*Features indicating CRF*

- **History**
  - poor health over 3-4 months, polyuria, nocturia, thirst
  - long standing diabetes mellitus or hypertension
- **Physical examination**
  - band keratopathy (calcium deposition beneath corneal epithelium)
  - peripheral neuropathy
- **Investigations**
  - normochromic anemia
  - shrunken kidneys on ultrasound*
  - renal osteodystrophy on Xray

*in CRF due to diabetic nephropathy and amyloidosis, the kidneys are enlarged.

*Causes of anemia in CRF*

- reduced renal erythropoietin production.
- hemolysis and depression of erythropoiesis due to uremia.
- gastrointestinal bleeding.
- marrow fibrosis (osteitis fibrosa of secondary hyperparathyroidism).

*VIP!*  Common exam case - right / left **iliac fossa mass** (transplanted kidney)

*Renal osteodystrophy*

- skeletal complications of CRF characterized by:
  - osteomalacia, osteitis fibrosa (caused by hypocalcemia, hyperphosphatemia and reduced synthesis of 1,25 -DHCC).
  - osteoporosis.
  - osteosclerosis (increased density at upper and lower ends of vertebra / "rugger jersey" spine).

*Investigation of CRF*

- blood tests - full blood count, ESR, urea, creatinine, calcium, phosphate, complements, autoantibodies.
- urine - microscopy, 24-hour protein, creatinine clearance.
- renal biopsy.
- radiological - ultrasound kidneys, bone Xray.

*Indications for dialysis*

- symptomatic uremia despite optimal treatment.
- fluid overload not responsive to diuretics.
- resistant hyperkalemia.
- significant impairment in quality of life.

*Conservative management of ESRF*

- **A**nemia - erythropoeitin
- **B**one disease - calcium, vitamin D
- **C**ardiac failure - diuretic, antihypertensive
- **D**iet - low protein
- **E**lectrolytes - ↑ potassium (resornium, dialysis)
- **F**luid restriction

*"ABCDEF"*

## CASE REPORT

This 41-year-old lady had undergone renal transplantation for end-stage renal failure. She was noticed to have these physical signs (Fig. 55 - Section 2) while returning to the outpatient clinic for follow-up. **Diagnosis**: *Gum hypertrophy and hypertrichosis secondary to long-term Cyclosporin therapy.*

**Comments**: Renal grafts are placed in retroperitoneal site in either iliac fossa adjacent to large peripheral vessels and the bladder. Life-long immunosuppression (Cyclosporin) is required after renal transplant.

I got the bill for my surgery. Now I know what those doctors were wearing masks for - James H. Boren

# CHRONIC RENAL FAILURE

"This gentleman has kidney problem - examine him"

**Face**
Anemia, band keratopathy
Gum hypertrophy**
Hypertensive / diabetic retinopathy

**Neck**
↑ JVP (fluid retention)

**Forearm**
Scratch marks
Bruising (platelet dysfunction)
Hypertrichosis**
Vasculitis
*Arteriovenous fistula - thrill*

**Chest**
Pericardial rub
Gallop rhythm
Basal lung crackles
Vertebral tenderness (renal osteodystrophy)


**Hands**
Pallor
"Half-and-half" nails*
Leukonychia
Asterixis
Tinel's sign (carpal tunnel syndrome)

**Abdomen**
- *Tenchkoff catheter*
- *Transplant scar*

Ballottable kidney(s)
Hepatosplenomegaly (polycystic kidney)
Loin tenderness
Prostatomegaly

**General inspection**
Sallow (dirty brown) appearance
Kussmaul's breathing
Cushingoid
Myoclonic jerks
Hiccups

*ShaharolMS*

**Legs**
- *Ankle edema*

Areflexia - peripheral neuropathy

*distal nail brown or red, proximal half pink or white.
**side effects of long-term Cyclosporin therapy for renal transplant.

**Excuse me Sir, I would like to complete my examination by checking the following:**
Blood pressure, urinalysis

## CASE 56 AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE (ADPKD)



- one of the commonest hereditary disorders.
- autosomal dominant inheritance with full penetrance.
- characterized by formation and progressive enlargement of renal cysts.
- ultimately progresses to end-stage renal failure in late middle life.

*Common presentations of ADPKD*

- hematuria - up to 50% of patients.
- hypertension (increased renin secretion) - up to 80% of patients.
- loin pain - hemorrhage into a cyst, infection, renal calculi.

*Complications of ADPKD*

- ADPKD is essentially a **multi-systemic disorder** which affects many extrarenal organs:

  - urolithiasis (20-30% of patients)
  - end-stage renal failure by age 60 (in 50% of patients)
  - extra-renal manifestations:
    - intra-abdominal cysts (liver, pancreas, spleen)
    - intracranial berry aneurysms (occur in 40% of patients, with 9% mortality rate from subarachnoid hemorrhage)
    - mitral valve prolapse, diverticular disease and abdominal aortic aneurysm
    - polycythemia (due to increased erythropoietin secretion)

*Establishing the diagnosis of ADPKD*

- family history.
- ultrasound / CT scan / MRI of kidneys - bilateral renal cysts in index patient plus one parent.
- gene-linkage studies:

a) mutation of PKD-1 gene on chromosome 16 (85-90% of cases) - protein product is polycystin-1.

b) mutation of PKD-2 gene on chromosome 4 (5-10% of cases) - protein product is polycystin-2.

- not widely available.
- indicated for at risk patients who have no demonstrable renal cysts on imaging studies.

## CASE REPORT

This 33-year-old gentleman was found to have hypertension on routine examination. His father died at the age of 40 due to "bleeding in the brain". **Findings**: BP 180/130 mm Hg, enlarged liver and spleen with nodular suface, ballottable kidneys. **Investigations**: Serum urea / creatinine - normal, ultrasound / CT kidneys - multiple cysts in the kidneys, liver, spleen and pancreas (Fig. 56.1-2). MR Angiography of brain - no berry aneurysm. **Diagnosis**: *ADPKD with young hypertension.*

**Comments**: This patient's father also had ADPKD - he died of subarachnoid hemorrhage due to ruptured berry aneurysm.

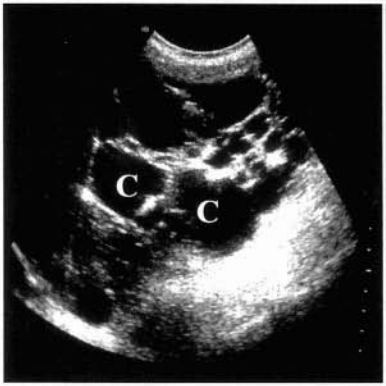



**Fig. 56.1** Ultrasound of right kidney showing renal cysts (C) on sagittal view.

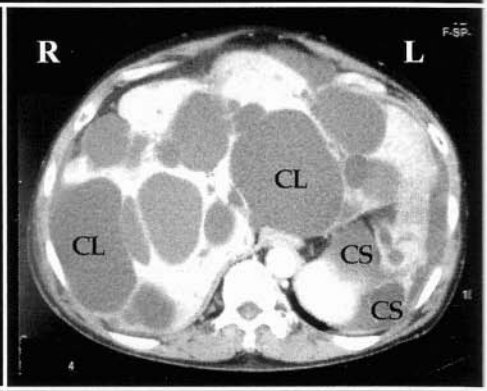



**Fig. 56.2** CT scan abdomen: cysts that appear as well-defined round or oval masses with low attenuation values similar to those of water. CL = cysts in the liver, CS = cysts in the spleen.

*Children.....*

*The truth about happiness is that.....,*

*it has to be given to others first...,*

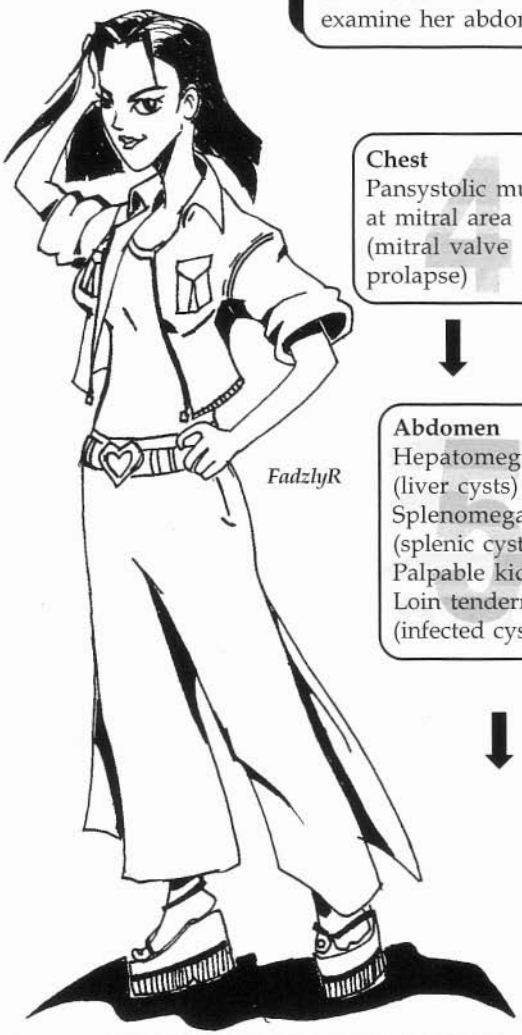
*before you can finally possess it"*

# POLYCYSTIC KIDNEY DISEASE

"This patient has chronic renal failure - examine her abdomen"

**Face / eyes**
Anemia (CRF)
Polycythemia (increased erythropoiesis)
Third cranial nerve palsy (posterior communicating artery aneurysm)

**Chest**
Pansystolic murmur at mitral area (mitral valve prolapse)




**Forearm**
Arteriovenous fistula

**Abdomen**
Hepatomegaly (liver cysts)
Splenomegaly (splenic cysts)
Palpable kidneys
Loin tenderness (infected cyst)

**General inspection**
Sallow appearance (CRF)

**Excuse me Sir, I would like to complete my examination by checking the following:**
Blood pressure (hypertension)
Family history of young stroke (ruptured berry aneurysm resulting in subarachnoid hemorrhage) and renal disorder



I'm very proud that I'm smart enough to get to the point - Harry Truman

# SECTION 3

# CHAPTER 11 – FUNDOSCOPY

## CASE 57 DIABETIC RETINOPATHY ★★★

**Classification of diabetic retinopathy (DR) -** Fig. 57.1-5 (Section 2)

**Non-proliferative DR (NPDR)**
- Microaneurysms, hard exudates
- Dot and blot hemorrhages

**Pre-proliferative DR (PPDR)***
- Venous beading, soft exudates
- Intraretinal microvascular abnormalities (IRMA)

**Proliferative DR (PDR)**
- Neovascularization of the retina, optic disc or iris
- Fibrous tissue adherent to vitreous face of retina
- Retinal detachment
- Vitreous or pre-retinal hemorrhage

**Diabetic maculopathy (DM)**
- Retinal edema and hard exudates around the fovea

*venous beading, soft exudates and IRMA are signs of retinal ischemia, and indicate the likelihood of progression to PDR.

*Terminology*

*Microaneurysms* - focal dilatations of retinal capillaries that appear as red dots.
*Dot and blot hemorrhage* - rupture of capillary in the middle layers of retina.
*Hard exudate* - lipid material that leaked out from capillaries, appear as bright yellow lesions with distinct margin.
*Venous beading* - sausage-shaped dilatation of the retinal vein.
*Soft exudate* - infarction of nerve fibers that appear as white lesions with blurred margin.
*IRMA* - dilated capillaries that represent intra-retinal neovascularization.
*Retinal edema* - grayish areas of retinal thickening.

***What are the mechanisms of visual loss in DR?***
- DM - the most common cause of visual loss in diabetics.
- PDR

a) tractional retinal detachment

- contraction of fibrovascular tissue and vitreous → focal elevation of the retina → tractional retinal detachment.

b) vitreous or pre-retinal hemorrhage:
- the overlying vitreous contracts and pull on the fragile new vessels.

c) rubeosis iridis and rubeotic glaucoma:
- the new vessels block the anterior chamber drainage angle.

*VIP!*

The occurrence of DR is directly related to **duration** of diabetes mellitus

*Management of DR*

- address the **risk factors that worsen DR** especially poorly controlled diabetes
  - aggressive glycemic control reduces the risk of DR in Type 1 diabetes (*Diabetes Control and Complications Trial*) and Type 2 diabetes (*United Kingdom Prospective Diabetes Study*).
- retinal photocoagulation:
  - leads to regression of new vessels and reduces risk of visual loss.

*VIP!*

**Risk factors** for worsening of DR:
- poor glycemic control
- hypertension
- diabetic nephropathy
- hyperlipidemia

*How does retinal photocoagulation work?*

- destruction of ischemic retinal tissue → reduced oxygen consumption → reduced hypoxic stimulus for production of angiogenic factors.
- it does not directly photocoagulate the new vessels.

*Diagnosis of diabetes mellitus*

- fasting plasma glucose > 7.0 mmol /l or
- symptoms (polyuria, polydipsia, unexplained weight loss) and random plasma glucose > 11.1 mmol / l or
- plasma glucose > 11.1 mmol / l after a 75 g glucose load

*The diagnosis of diabetic retinopathy is EVERY medical student's basic responsibility*



I love the man that can smile in trouble, that can gather strength from distress, and grow brave by reflections - Thomas Paine

- various retinal changes seen in hypertension.
- one of the markers of target-organ damage.

*Grades of hypertensive retinopathy*

**Keith, Wagener and Barker classification**

- Grade 1 - slight or modest narrowing of retinal arterioles, with an arteriovenous ratio of ≥ 1 : 2
- Grade 2 - modest to severe narrowing of retinal arterioles, with an arteriovenous ratio of < 1 : 2 , arteriovenous nipping
- Grade 3 - exudates (cotton wool or hard exudates), flamed-shaped hemorrhages
- Grade 4 - papilledema

**Note**: Narrowing of retinal arterioles and arteriovenous nipping are not specific to hypertensive retinopathy - they are also seen in arteriosclerosis due to ageing.

*Malignant hypertension*

- severely elevated blood pressure accompanied by Grade 4 retinopathy (Fig. 58 - Section 2).

*How do you distinguish DR from hypertensive retinopathy?*

| Features | Diabetic retinopathy | Hypertensive retinopathy |
|---|---|---|
| Papilledema | absent | may be present |
| Arteriolar constriction | absent | present |
| Soft exudates | + | +++ |
| Hard exudates | +++ | + (macular star) |
| Microaneurysms | +++ | + |
| Dot and blot hemorrhages | +++ | + |
| Flame-shaped hemorrhages | + | +++ |
| New vessels | present | absent |

*What are the clinical implications of hypertensive retinopathy?*

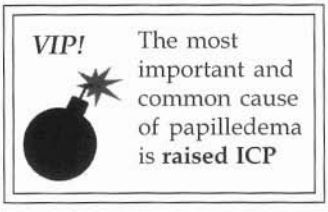
- it is associated with increased risk of coronary heart disease and stroke that is independent of hypertension and other risk factors.
- close monitoring of cardiovascular risk needed.
- Grade 4 retinopathy - urgent reduction of blood pressure.

## CASE 59 OPTIC NEURITIS / PAPILLEDEMA ★★★

• the differential diagnoses of blurred optic disc margin are:

| Features | Optic neuritis | Ischemic optic neuropathy | Papilledema |
|---|---|---|---|
| Pathological process | Inflammation of optic nerve head | Infarction of optic nerve head due to posterior ciliary artery occlusion | Raised intracranial pressure |
| Visual acuity | ↓ | ↓ | Normal* |
| Visual field | Central scotoma | Inferior altitudinal defect | Enlarged blind spot<br>Peripheral field constriction |
| Pupils | RAPD** | RAPD** | Normal |
| Color vision | Affected | Affected | Normal |
| Side affected | Unilateral | Unilateral | Bilateral |
| Causes | Multiple sclerosis | Hypertension<br>Diabetes mellitus<br>Temporal arteritis | **Space-occupying lesion** (tumor, meningitis, abscess)<br>Hydrocephalus<br>Malignant hypertension<br>Central retinal venous occlusion[γ] |

*visual acuity may be impaired in the late stage (optic atrophy).
**relative afferent pupillary defect (Marcus-Gunn pupil).
[γ]widespread retinal hemorrhages ("battle-field" fundus) - Fig. 59.1 (Section 2).




## CASE REPORTS

**PATIENT 1** This HIV-infected man presented with headache. **Findings**: ***Bilateral sixth cranial nerve palsy,*** both eyes - ***normal visual acuity and pupils,*** blurred optic discs margin (Fig. 59.2 - Section 2). **Investigations**: CT brain - normal, lumbar puncture - CSF pressure of 47 cm CSF, white cells 240 / $mm^3$, 90% lymphocytes, glucose 1.6 mmol/l, protein 2.9 g/dl and positive Cryptococcal antigen test. **Diagnosis**: *Cryptococcal meningitis with bilateral papilledema.*

**Comments**: Always look hard for sixth cranial nerve palsy (false localizing sign) in any patient with papilledema.

**PATIENT 2** A young Chinese lady presented with acute onset of right-sided blindness and eye pain. **Findings**: Right eye - ***poor visual acuity, Marcus-Gunn pupil,*** increased redness of optic disc, blurred optic disc margin. **Investigations**: MRI of right orbit - thickening and contrast enhancement of optic nerve. **Diagnosis**: *Right optic neuritis.*

Happiness is not a state to arrive at, but a manner of traveling - Margoret Lee Runbeck

# CASE 60 OPTIC ATROPHY

- optic atrophy appears as pale optic disc on funduscopy.
- usually associated with Marcus-Gunn pupil and central scotoma.

**Note**: When the color of the optic disc changes from reddish orange (normal) to yellow, optic atrophy has already set in. In the latest stage of optic atrophy, the color is white.

| Causes of optic atrophy | |
|---|---|
| *Unilateral* | *Bilateral* |
| **Compression*** – raised intracranial pressure (ICP) (tumor, chronic meningitis) | Toxin – alcohol, tobacco |
| Demyelinating disorder (multiple sclerosis) | Hereditary – Leber's optic atrophy, Retinitis pigmentosa |
| Ischemia – ischemic optic neuropathy, central retinal artery occlusion | Metabolic – vitamin B12 deficiency |

*VIP!*

The most important cause of optic atrophy is **raised ICP**

*the optic atrophy may be bilateral if there is generalized increase in ICP.

## CASE REPORTS

**PATIENT 1** This HIV-negative man with Cryptococcal meningitis had initially presented with headache and fever for four weeks. On admission, the only neurological abnormality was bilateral papilledema. ***Visual acuity and pupils were normal.*** **Progress**: Two months later, examination revealed bilateral optic atrophy (Fig. 60.1 - Section 2), ***fixed and dilated pupils, and total blindness***. **Diagnosis**: *Bilateral optic atrophy due to chronic meningitis (Cryptococcal).*

**Comments**: Papilledema is usually seen during the early stage of raised ICP (particularly when there is sharp rise in ICP). With chronically raised ICP, optic atrophy gradually develops. In this patient, the development of optic atrophy and blindness could have been prevented if ventriculoperitoneal shunt was carried out during the first presentation.

**PATIENT 2** This Chinese lady presented with paraplegia due to transverse myelitis (multiple sclerosis). Five years earlier, she developed complete blindness of left eye following several episodes of left optic neuritis. **Findings**: Left eye - optic atrophy (Fig. 60.2 - Section 2), ***Marcus-Gunn pupil, poor visual acuity and central scotoma***. Paraplegia with upgoing plantars. **Diagnosis**: *Left optic atrophy due to previous optic neuritis.*

# REFERENCES


*General Medicine*

Donnelly TJ, Giza CC. Differential Diagnosis Mnemonics. Philadelphia: Hanley & Belfus, Inc, 2001.

Friedman HH. Problem-Oriented Medical Diagnosis. Boston: Little, Brown and Company, 1996.

Isselbacher KJ et al (Eds). Harrison's Principles and Practice of Internal Medicine (9th Edition). New York: McGraw-Hill, 1980.

Macleod J (Ed). Davidson's Principles and Practice of Medicine (14th Edition). Oxford: Chuchill Livingstone, 1984.

Shipman JJ. Mnemonics and Tactics in Surgery and Medicine. London: Lloyd-Luke (Medical Books) Ltd, 1978.

Tao Le, Bhushan V, Chirag A, et al. First Aid for the Wards (2nd Edition). New York: McGraw-Hill Companies, Inc, 2003.

Weatherall DJ et al (Eds). Oxford Textbook of Medicine. Oxford University Press, 1987.

*Neurology*

Adams RD, Victor M, Ropper AH: Principles of Neurology. New York: McGraw-Hill, 1997.

Patten JP. Neurological differential diagnosis. New Delhi: Narosa Publishing House, 1982.

*Endocrinology / Metabolic Diseases*

Orth DN. Cushing's syndrome. N Engl J Med 1995; 332(12): 791-803.

The Diabetes Control and Complications Trial Research Group: The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. N Engl J Med 1993; 329: 977-986.

UK Prospective Diabetes Study Group: Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with Type 2 diabetes. Lancet 1998; 352: 837-853.

Weetman AP. Grave's disease. N Engl J Med 2000; 343(17): 1236-1248.

Werner SC. Modification of the classification of the eye changes of Grave's disease: recommendation of the ad hoc committee of the American Thyroid Association. J Clin Endocrinol Metab 1977; 44: 203-204.

Wilson JD, Foster DW (Eds). Williams Textbook of Endocrinology (8th Edition). Philadelphia: WB Saunders Company, 1992.

*Dermatology*

Adam BA. Current treatment in Dermatology. Kuala Lumpur: S. Abdul Majeed & Co, 1994.

Mackie RM. Clinical Dermatology: An Illustrated Textbook (2nd Edition). Oxford University Press, 1986.

Roujeau JC, Kelly JP, Naldi L, et al. Medication use and the risk of Stevens-Johnson syndrome and toxic epidermal necrolysis. N Engl J Med 1995; 333: 1600-1607.

*Cardiovascular system*

Braunwald E (Ed). Heart Disease. A textbook of Cardiovascular Medicine. Philadelphia: WB Saunders Company, 1980.

Brickner ME, Hillis LD, Lange R. Congenital Heart Disease in Adults (Second of Two Parts). N Engl J Med 2000; 342(5): 334-342.

Carabello BA, Crawford FA. Valvular heart disease. N Eng J Med 1997; 337(1): 32-41.

Falk RH. Atrial fibrillation. N Engl J Med 2001; 344(14): 1067-1078.

Mylonakis E, Calderwood SB. Infective endocarditis in adults. N Engl J Med 2001; 345(18): 1318-1330.

Vongpatanasin W, Hillis LD, Lange RA. Prosthetic heart valves. N Eng J Med 1996; 335(6): 407-416.

Williams B, Poulter NR, Brown MJ, Davis M, McInnes GT, Potter JF et al. British Hypertension Society guidelines for hypertension management 2004 (BHS-IV). BMJ 2004; 328: 634-640.

Wong TY, Mitchell P. Hypertensive retinopathy. N Engl J Med 2004; 351(22): 2310-2317.

*Hematology*

Hoffbrand AV, Pettit JE. Essential Haematology (3rd Edition). Oxford: Blackwell Scientific Publications, 1993.

*Nephrology*

Badani KK, Hemal AK, Menon M. Autosomal dominant polycystic kidney disease and pain - A review of the disease from aetiology, evaluation, past surgical treatment options to current practice. J Postgrad Med 2004; 50: 222-226.

*Rheumatology*

Helliwell PS, Taylor WJ. Classification and diagnostic criteria for psoriatic arthritis. Ann Rheum Dis2005; 64: 3-8.

Klippel JA, Dieppe PA. Rheumatology (2nd Ed). Vol 2. London: Mosby, 2000.

Moll JMH, Wright V. Psoriatic arthritis. Semin Arthritis Rheum 1973; 3: 55-78.

*Infectious Diseases*

Guerrant RL, Walker DH, Weller PF. Tropical Infectious Diseases. Principle, Pathogen and Practice. Philadelphia: Churchill Livingstone, 1999.

*Respiratory*

Medford A, Maskell N. Pleural effusion. Postgrad Med J 2005; 81: 702-710.

Pauwels RA, Buist AS, Calverley PM, et al. Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. Am J Respir Crit Care Med 2001; 163: 1256-76.

The British Thoracic Society / Scottish Intercollegiate Guideline Network. British Guideline on the management of asthma. Thorax 2003; 58 (S1): i1-i94.

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