

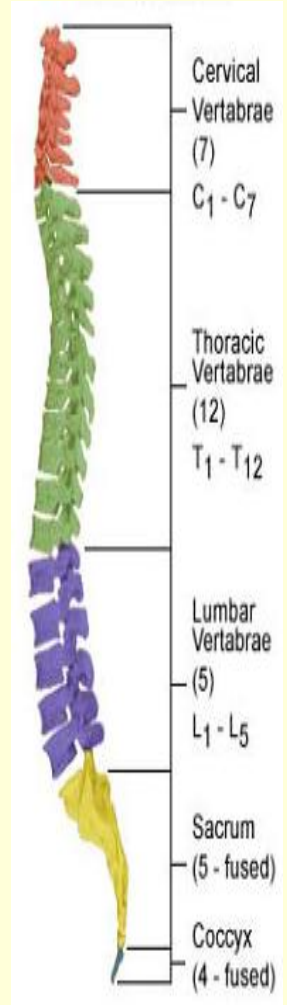
MANAGEMENT OF SPINE TUBERCULOSIS

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POTT'S DISEASE

- Spinal TB constitutes about 50% of all cases of osteoarticular TB.
- Tubercular spondylitis is named as “Pott disease” after works of Percival Pott.
- MC site: Thoracic , lumbar region followed by cervical vertebrae.
- Can occur at any age but usually more in first 3 decades.

- 1 Cervical 12%
- 2 Cervicodorsal 5%
- 3 **Dorsal 42%**
- 4 Dorsolumbar 12%
- 5 Lumbar 26%
- 6 Lumbosacral 3%

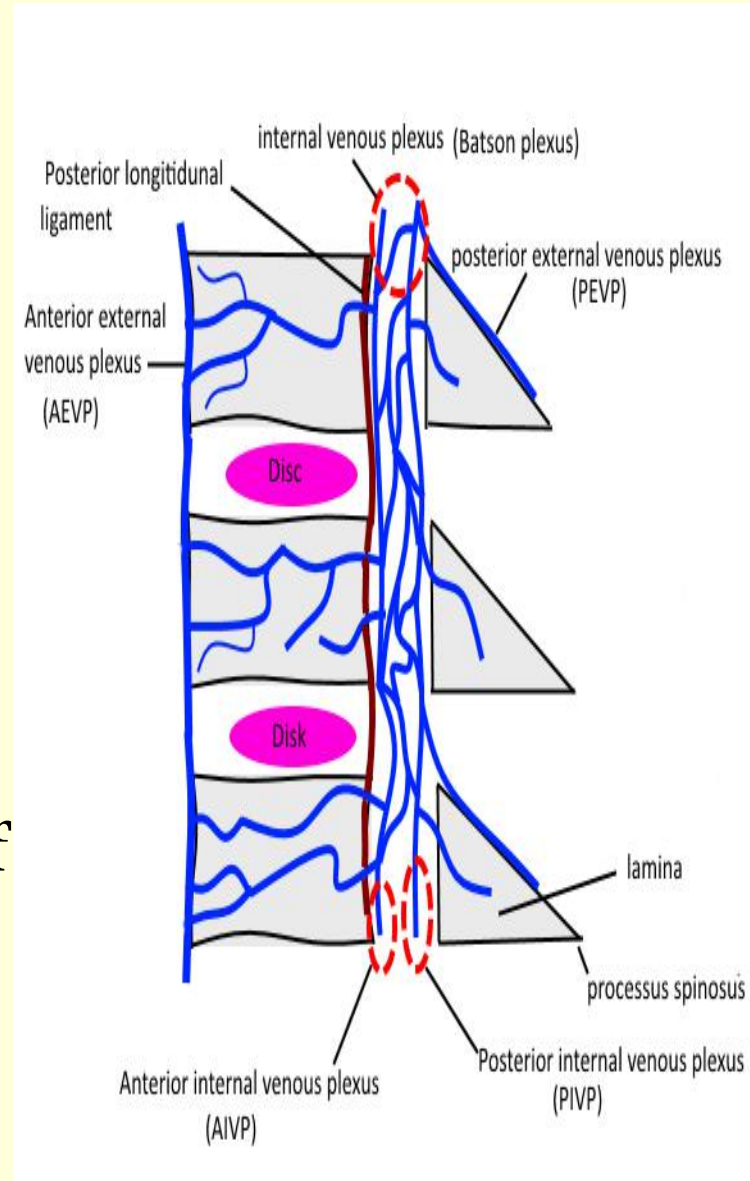


PATHOLOGY

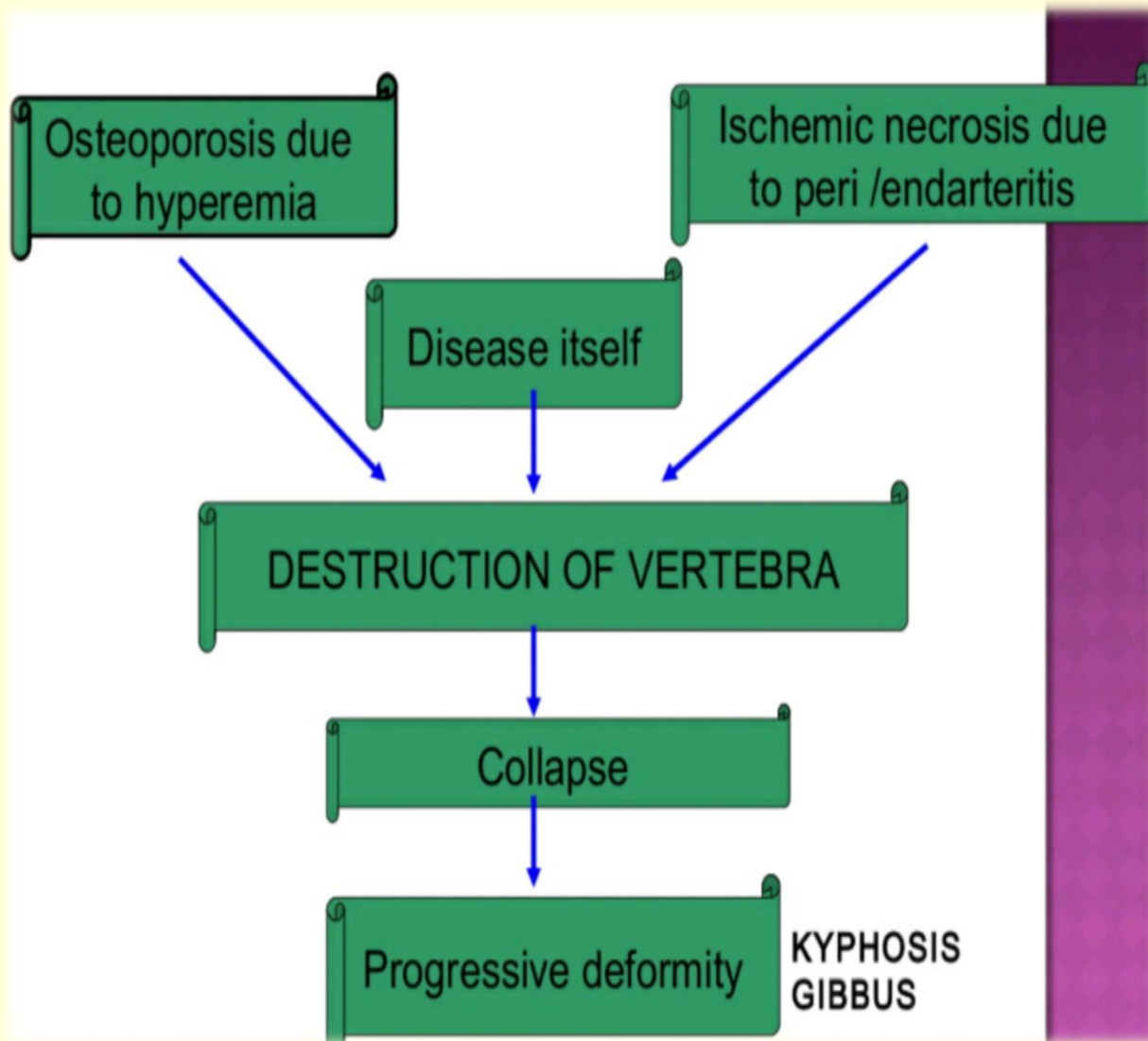
Pott's disease is usually secondary to an extraspinal source of infection.

Typically, more than one vertebra is involved.

Infection occurs through haematological spread, generally the arteries or through Batson's plexus of veins in axial skeleton.



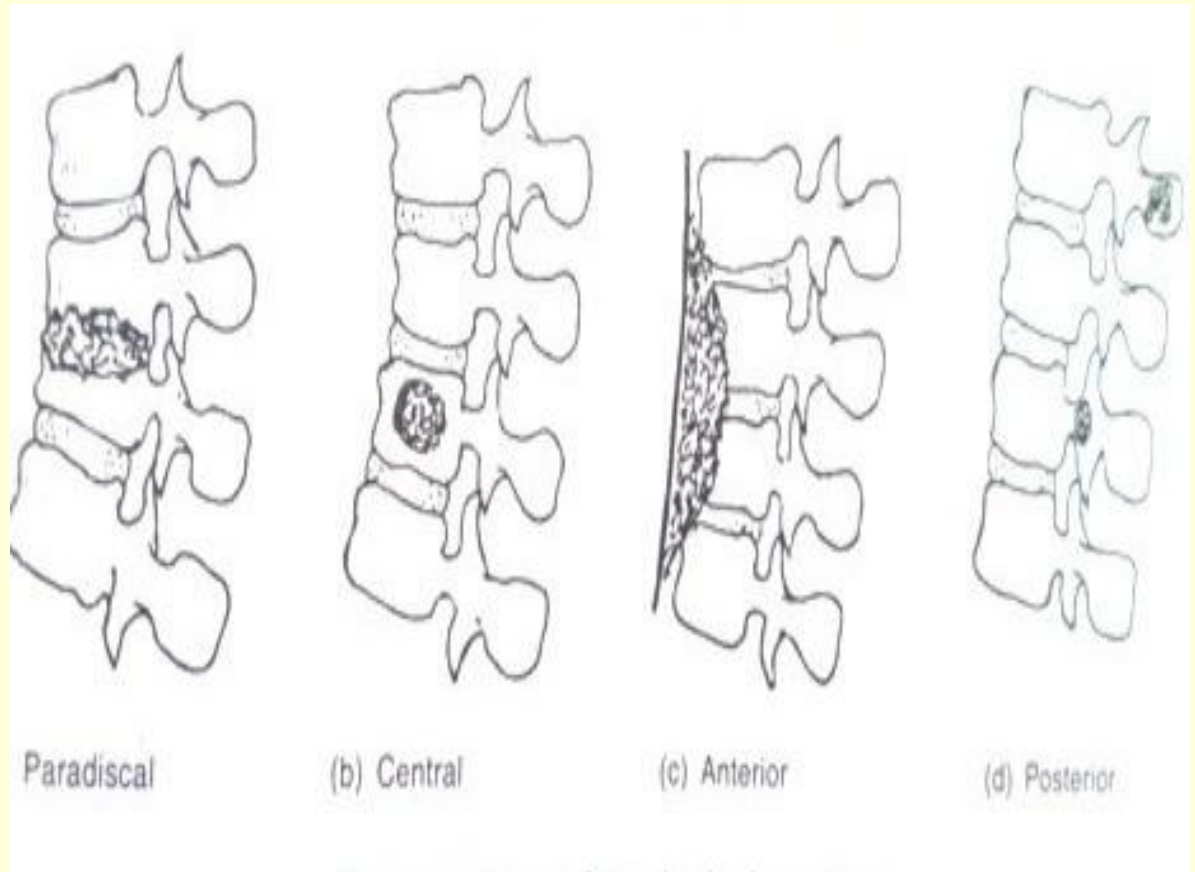
Pathogenesis of TB Spine



Patterns of Vertebral Involvement

Four patterns :

- Paradiscal
- Central
- Anterior
- Appendiceal (Posterior)



CLINICAL FEATURES

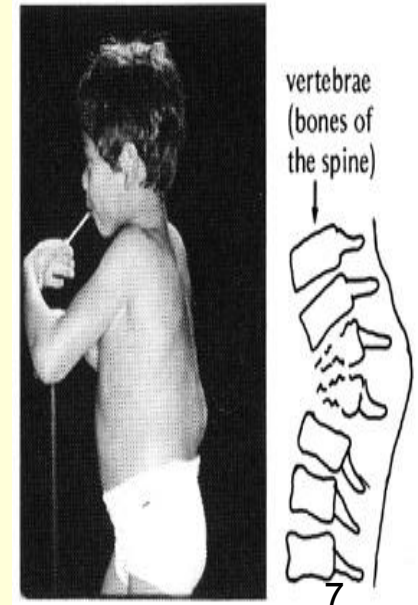
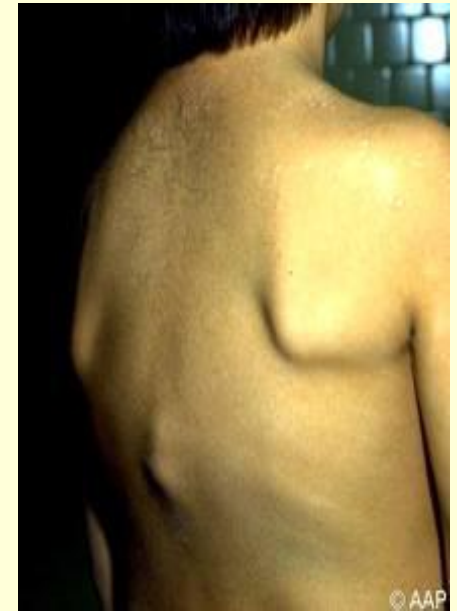
Active stage

1. **Back pain (Commonest), Diffuse** in early stages, but later become **localised** to the affected diseased segments.

It may be a **radicular pain**.

- | | |
|----------------------|-------------------------|
| 1.Cervical root- | Arm pain |
| 2.Dorsal root- | Girdle(pectoral) pain |
| 3.Dorso-lumbar root- | Abdomen pain |
| 4.Lumbar root- | Groin pain , or |
| 5.Lumbo-Sacral root- | Sciatic pain |

2. **Spine Stiffness**: spasm of para-vertebral muscle
3. **Night cries**
4. **Deformity**: Knuckle /Gibbus/Kyphus.
5. **Cold abscess**: May be present
6. **Paraplegia** (if neglected in early stages)



7. Constitutional Symptoms (Only in 20% cases):

Malaise, weight loss, loss of appetite, night sweats, evening rise of temperature.

B. Healed stage

No systemic features but deformity persists.

Radiological evidence of bone healing

Patient may present with cold abscess or due to its compression effects:-

Retropharyngeal abscess --Dysphagia, dyspnea,

Hoarseness of voice

Mediastinal abscess --Dysphagia

Psoas abscess -- Flexion deformity of hip

NEUROLOGICAL COMPLICATIONS

ETIOLOGY :-

Inflammatory : Inflammatory edema , tuberculous abscess.

Mechanical : Tubercular debris, sequestra, cord constriction due to vertebral canal stenosis, localized pressure.

Intrinsic : Infective thrombosis, Tuberculous meningomyelitis , syringomyelic changes.

Pott's Paraplegia

It is a most serious complication of spinal TB , incidence is approx 20%.

MC in dorsal spine because it is the narrowest region, abscess remains confined under tension.

SEDDON'S CLASSIFICATION (TUBERCULOUS PARAPLEGIA)

GROUP A (*EARLY ONSET PARAPLEGIA*)

GROUP B (*LATE ONSET PARAPLEGIA*)

Active phase of disease within 1st 2 years of onset

After 2 yrs of onset

Pathology : inflammatory edema, granulation tissue, abscess, caseous material or ischemia of cord

Recrudescence of the disease or due to mechanical pressure on the cord

Pathology can be sequestra, debris, internal gibbus or stenosis of the canal

PARA/QUADRIPLEGIA (predominantly based on motor weakness)

STAGE		CLINICAL FEATURES
I	Negligible	Patient unaware of neurological deficits, plantar extensor &/or ankle clonus
II	Mild	Patient aware of deficit but manages to walk with support (spastic paresis)
III	Moderate	Non ambulatory because of paralysis (in extension), sensory deficits less than 50 %
IV	Severe	Stage III + Flexor spasms/ paralysis in flexion / sensory deficit more than 50% / sphincters involved

DIFFERENTIAL DIAGNOSIS

- ❑ **Congenital defects** like block vertebra, Schmorl's disease, Scheuermann's disease.
- ❑ **Infectious conditions** like Acute pyogenic, Typhoid spine, Brucella spondylitis, Mycotic Spondylitis, Syphilis
- ❑ **Tumours Conditions :-**
 - ❑ Benign : Hemangioma, Giant cell tumour, Aneurysmal bone cyst.
 - ❑ Malignant : Secondaries Ewing's sarcoma, Osteogenic sarcoma, Multiple myeloma.
- ❑ **Traumatic conditions**

INVESTIGATIONS

□ CLINICO RADIOLOGICAL &

- LAB STUDIES
- Mantoux / tuberculin skin test
- Microbiological studies
- Histopathological study
- CT SCAN
- MRI SCAN
- USG
- RADIONUCLIDE SCAN
- MYELOGRAPHY

BASIC PRINCIPLES OF MANAGEMENT

- Early diagnosis
- Medical treatment
- Aggressive surgical approach
- Prevent deformity
- Best outcome

TREATMENT

- Aim of treatment is to achieve healing of disease & to prevent, detect early & promptly any complication like paraplegia.
- **Rest:** Bed rest for pain relief & to prevent further collapse & dislocation of diseased vertebrae.
- For cervical spine → Minerva jacket & collar

- **Building up of patient's resistance** : High protein diet
- **ATT** : This remains the cornerstone of management, completed by rest, nutritional support & splinting, as necessary.
- There is difference of opinion regarding the duration of drug therapy.
- **Short course chemotherapy for 9-10months** has shown good results in patients.
- **Antibiotics** : For persistently draining sinuses which get secondary infection.
- **Bed sore care** & to treat other comorbid conditions.

- **Mobilisation** : Gradual as improvement begins
→ sit & walk, the spine is supported with collar(cervical), brace (dorso-lumber spine)
- Cold abscesses may subside with ATT, if present superficially may need aspiration(antigravity insertion of needle through a zig-zag tract) or evacuation.
- Sinuses: Mostly heal within 6-12 weeks.
If no improvement → Excision of tract

1ST LINE CHEMOTHERAPY

Bactericidal drugs	Dose
1. Isoniazid	5mg/kg
2. Rifampicin	10-15 mg/kg
3. Streptomycin	20mg/kg
4. Pyrazinamide	20-25 mg/kg

Bacteriostatic drugs	Dose
1. Ethambutol	25mg/kg (x 2mnths) Then 15mg/kg

NEWER DRUGS

- Amikacin, Kanamycin, capriomycin
- Ciprofloxacin, Ofloxacin, Levofloxacin
- Rifabutin
- Clarithromycin
- Clofazimine
- Ethionamide
- Cycloserine

POLICY OF DRUG TREATMENT

- Intensive phase of 2 months

INH+RMP+PZN+ETM(HRZE)

Continuation phase for 9-12months

INH + RMP(HR)

10mg of pyridoxine for prevention of peripheral neuropathy

SIDE EFFECTS OF ATT

- ISONIAZID
 - NEUROTOXITY
 - PERIPHERAL NEURITIS
 - MUSCULAR TWITCHING, PARESTHESIAS
 - PSYCHOLOGICAL DISTURBANCES

50 mg of pyridoxine, 100mg nicotinamide & supplementation with vitamin B

RIFAMPICIN

- HEPATOTOXICITY
- FLU-LIKE SYNDROME
- ERYTHEMATOUS REACTION
- RED BROWN DISCOLOURATION OF BODY FLUIDS

PYRAZINAMIDE

- HEPATOTOXICITY
- ARTHRALGIA
- FLUSHING

- **STREPTOMYCIN**

- VESTIBULAR DAMAGE
- DEAFNESS
- NEPHROTOXICITY
- CONTACT
DERMATITIS

- **ETHAMBUTOL**

- RETROBULBAR
NEURITIS
- DIMINUTION OF VISUAL
FIELD
- COLOUR BLINDNESS

MIDDLE PATH REGIMEN

- Rest in hard bed
- Chemotherapy
- X-ray & ESR once in 3 months
- MRI/ CT at 6 months interval for 2 years
- Gradual mobilization is encouraged in absence of neural deficits with spinal braces & back extension exercises at 3 – 9 weeks.
- Abscesses – aspirate when near surface & instil 1gm
- Streptomycin +/- INH in solution

- Sinus heals 6-12 weeks
- Neural complications if showing progressive recovery on ATT b/w 3-4 weeks -- surgery unnecessary
- Excisional surgery for posterior spinal disease associated with abscess / sinus formation +/- neural involvement.
- Operative debridement—if no arrest after 3-6 months of ATT / with recurrence of disease .
- Post op spinal brace→18 months-2 years

DRUGS IN MIDDLE PATH REGIMEN

Phase	Duration	Drugs	
Intensive (for replicating mycobacteria)	5 – 6 months	INH +	Rifampicin & ofloxacin
Continuation (for persisters, slow growing or dormant or intracellular mycobacteria)	7 – 8 months	INH +	Pyrazinamide x 3-4 months f/b Rifampicin x 4-5 months
Prophylactic	4 – 5 months	INH +	Ethambutol

INDICATION FOR SURGERY IN PATIENTS WITH SPINAL TB & PARAPLEGIA

- **Absolute indications :-**

- Onset of paraplegia during conservative treatment

- Persistence or complete loss of motor power for one month despite conservative treatment.

- Paraplegia accompanied by uncontrolled spasticity of such severity that rest and immobilisation are not possible.

- Severe paraplegia of rapid onset, paraplegia in flexion, flaccid paraplegia, complete sensory or motor loss for > 6 months.

- **Relative Indication :-**

- Recurrent paraplegia even with paraplegia that would cause no concern in first attack

- Paraplegia with onset in old age

- Painful paraplegia

- complications such as UTI and stones

- **Rare Indications:-**

- Post. Spinal disease

- spinal tumour syndrome

- severe paralysis from cervical disease,

- severe cauda equina paralysis

	SURGERY	INDICATIONS
1	Decompression (+/- fusion)	Too advanced ds, failure to respond to conservative therapy
2	Debridement + /- decompression +/- fusion	Recurrence of disease or of neural complication
3	Anterior transposition of cord (Extrapleural anterolateral approach)	Severe kyphosis ($>60^{\circ}$) + neural deficits
4	Laminectomy	Extradural granuloma / tuberculoma (STS), Old healed disease presenting as secondary canal stenosis / posterior spinal disease

APPROACH

1. Cervical spine – Anterior retropharyngeal
(smith-Robinson's)
Anterior approach – Anterior/Medial
border of sternocleidomastoid.
2. Dorsal spine (D1 to L1) –
 - 1 Transthoracic transpleural
 - 2 Anterolateral decompression(D2 – L1)
3. Lumbar spine – Anterolateral(Lumbovertebrotomy)
Extraperitoneal Ant. Approach
Posterior approach

Surgeries for Pott's Paraplegia

1. **Anterio-lateral decompression (MC)**-Spine is opened up from its lateral side & access is made to the front and side of the cord. The cord is laid free from granulation tissue, caseous material, bony spur or sequestrum
2. **Costo-transversectomy**-Removal of 2 inches of rib & transverse process → pus drained.
3. **Radical debridement and arthrodesis (Hongkong operation)**
4. **Laminectomy & posterior stabilisation**-Indicated in spinal tumour syndrome and paraplegia resulted from post. spinal disease.

Cervical spine: Anterior decompression is preferred.

Thank you!