TUBERCULOSIS OF HIP AND KNEE JOINT
TUBERCULOSIS OF HIP JOINT

- Occurrence - 15% of all osteo articular tuberculosis

- Next common after spinal TB
AETIO PATHOGENESIS

• Most common cause Mycobacterium tuberculosis

• Always secondary to some focus in lungs, lymph nodes

• Mode of spread is either haematogenous or by direct extension from a neighbouring focus.
PATHOLOGY

• Tubercular infection produces similar response as it produces in the lungs i.e. chronic granulomatous inflammation with caseation necrosis.
  • Always starts in Bone and initial focus is in
    i) Acetabular roof
    ii) Greater trochanter
    iii) Femoral epiphysis
    iv) Rarely synovial membrane

• In hip joint head and neck are intracapsular so a bony lesion invades the joint early

• Destruction spread to acetabulam

• May become so extensive that pathological dislocation of joint occurs
NATURAL HISTORY

• Joint involvement usually a low grade synovitis with thickening of synovial membrane

• Unlike Pyogenic arthritis, it causes of slow destruction of articular cartilage.

• The inflamed synovium surrounding the cartilage is called pannus

• Eventually the cartilage is completely destroyed and joint is distended with pus.

• Joint capsule and ligaments become lax and subluxated

• Pus and debris burst out of the joint capsule to form cold abscess – chronic discharging sinus.
CLINICAL FEATURE

• Insidious onset, runs a chronic course

• Most patients are children

• May have constitutional symptoms before symptoms pertaining to hip joint appear

• First symptom is stiffness of the hip and it produces a limp.

• Pain may be absent in early stages.

• Complains of night cries called starting pain – rubbing of two diseased surfaces when the movement occurs due to muscle relaxation during sleep.
STAGES OF TB HIP JOINT

• Stage I
Stage of synovitis
There is effusion into the joint
which demands the hip to be in a position of maximum capacity
i.e. flexion, abduction and external rotation.

• Stage of apparent lengthening
Stage II:

Stage of arthritis

- Articular cartilage is involved
- Leads to spasm of powerful muscle around the hip
- Flexors and adductors are stronger muscle
- Hip takes attitudes of flexion adduction and internal rotation

- Stage of apparent shortening
Stage III
Stage of erosion
-Cartilage is destroyed
- Head & acetabulum is eroded
- Pathological dislocation or subluxation of the hip occurs
- Stage of flexion, adduction & internal rotation.

- **True shortening of the limbs**
EXAMINATION

• lameness – the first sign

• Flexion deformity at the hip, child stands with compensatory lumber lordosis

• Hip is kept stiff while walking and forward backward movement at the lumbar spine is used for propulsion
  - Called stiff hip gait

• Muscle wasting

• Swelling due to cold abscess

• Discharging sinuses

• Flexion deformity
INVESTIGATION

- HgM – it may show lymphocytic leucocytosis, high ESR
- Mx test – useful in children
- Serum ELISA – for detecting anti mycobacterial anti bodies
- Synovial fluid aspiration
- Aspiration of cold abscess and examination of pus for AFB
- Histopathological examination of granulation tissue obtained from biopsy.

- RADIOLOGY – may show haziness of the bones around the joint – earliest sign
- Lytic lesions
• Reduction of joint space due to destruction of cartilage

• Other changes in advanced disease are
  i) Perthes type –
      femoral head is sclerotic

• Dislocating type
  Subluxation or dislocation of femoral head occurs because of capsular laxity and synovial hyper trophy
• Wandering Acetabulam Protrusio Acetabuli

• Mortar & pestle type
Due to erosion of subchondral bone

• Atrophic type
Femoral head is irregular & joint space is narrow
DIFFERENTIAL DIAGNOSIS

- Monoarthritis of hip – subacute low grade monoarthritis due to low grade septic infection.
- Inguinal lymphadenopathy and psoas abscess – may present with flexion deformity.
- Congenital dislocation of hip – painless limp
- Congenital coxavara – painless limp
- Perthe’s disease
- Osteoarthritis in older individual
TREATMENT

Control disease activity

Preserve joint movements

If left untreated, healing may take place by fibrosis – leads to fibrous ankylosis of hip

Early Stage (I & II) – Conservative Treatment with antituberclosis chemotherapy treatment

Late II and III – because of significant limitation of joint functions treatment is conservative as well as operative.

Care of hip – hip is put to rest by immobilisation using below knee skin traction
OPERATIVE TREATMENT

- Joint debridement – Joint is opened through posterior approach: pus, necrotic tissue inflamed synovium and dead cartilage are removed, washed thoroughly with saline.

- Girdle stone arthroplasty – hit joint is exposed – head & neck are excised – it is possible to regain reasonable movement by this procedure

- Arthrodesis in selected cases where stiff hip in a functional position is more suitable to the patients day to day activity, it is produced surgically.

- Total hip replacement – in some patients, it is useful operation
Fig-25.18: Treatment plan for T.B. hip

T.B. hip

ATT + below knee skin traction

Relief of symptoms and signs

Repeat X-rays to evaluate state of joint destruction

No or minimal joint irregularity

Mobilisation of the hip

Gain as much function as possible

Severe joint destruction or subluxation etc.

Normal joint functions not possible

If movement at the hip are desirable

If stability of the hip is desirable

Achieve fusion

By conservative methods

By operative methods

Girdlestone arthroplasty (most often needed)

Hip spica

Arthroplasty

TT - Anti-tubercular treatment
TUBERCLOSIS OF KNEE

• Superficial joint, early diagnosis is possible

PATHOLOGY

• It produces the same response as it produces in the lungs- i.e. chronic granulomatous inflammation with caseation necrosis

• May begin in adjoining bones, usually in femoral or tibial condyles or more rarely in patella.

• More commonly the disease begins in the synovium

NATURAL HISTORY

• Same as in tuberculosis of hip joint – long standing distension of joint and destruction of ligaments produces subluxation of tibia.

• Tibia flexes, slips backwards and rotates externally on the femoral condyles. (triple subluxation).
CLINICAL FEATURES

• The patient usually in the age group of 10 – 25 years
• Presents with insidious onset pain & swelling in the knee.
• Leads to stiffness of the knee, and the child starts limping

EXAMINATION

• Following findings may be present
  - Swelling – could be due to synovial effusion or synovial hypertrophy
  - Loss of para patellar hollows
  - Muscle atrophy
  - Cold abscess discharging sinuses
  - Deformity – early stages there is mild flexion deformity later triple displacement (flexion, posterior subluxation & external rotation occurs due to ligament laxity. Movements are limited.
INVESTIGATIONS

• Hgm Mx.

• Serum ELISA

• Synovial fluid aspiration

• Aspiration of cold abscess and examination of pus for AFB.

• Histopathological examination of granulation tissue obtained from biopsy.

• Radiology – X-ray is essentially normal in case of synovial tuberculosis.
  - Joint space may be widened
  - Defuse osteoporosis of the bones around the joint
  - Lytic lesion around the joint
  - In advance stages triple subluxation with cavitory bone lesion may be present
AP View with advanced knee joint
T.B. showing the destruction of bones
Lateral subluxation & flexion deformity

Lateral view (same patient showing flexion deformity)
DIFFERENTIAL DIAGNOSIS

• Sub acute pyogenic infection
• Monoarticular rheumatoid arthritis
• Chronic traumatic synovitis
• Rheumatic arthritis
• Haemophilic arthritis

TREATMENT

• Aim to achieve a painless mobile joint
• This is possible if patient has come early for treatment
• In later stages some amount of pains and stiffness persist inspite of treatment
METHODS

• Conservative treatment is begun in all cases & decision for surgery taken if this is indicated.

• Conservative treatment – it includes antitubercular chemo therapy, general care, local care of the part effected.

• Care of the knee – knee is rested by applying below knee skin traction or an above knee POP slab. This helps in healing process & also takes care of the associated muscle spasm which keeps the knee in a deformed position.

OPERATIVE TREATMENT

• The following operative procedure may be required in suitable cases

  -Synovectomy : it is required in cases of purely synovial tuberculosis.

  -Joint debridement : This may be required where the articular cartilage essentially preserved, pus is drained, synovial excised all the cavities curetted.
• Arthrodesis in advance stages with triple subluxation & cartilage destruction the knee is fixed in a functional position i.e. about 5 to 10 degrees of flexion.
Caseation necrosis, Langhans giant cell

Caseation necrosis, Giant Cell & Lymphocytes
All the best..