Dr. Muhammad Zahoor ul Haq

Tuberculous Meningitis

-Most serious and fatal without effective treatment

Pathogenesis:

- Lymphohematogenous spread from primary infection

- Subcortical metastatic caseous lesion (Rich's focus)

- Discharges Tubercle bacilli into subarachnoid space

- Gelatinous exudate infiltrates corticomeningeal vessels producing primary infection

- Infarction of cerebral cortex

- Brainstem involvement-Cranial nerve palsies. III, IV,VII

- Communicating Hydrocephalus

Clinical Features

- 0.3% of untreated primary infections
- Age: 6month – 4 years
- Onset: Commonly insidious

*1st Stage:

- Nonspecific symptoms
- Fever, Headache, Irritability
- Loss of interest in play
- Lasts from 1-3 weeks

2nd Stage:

-Signs of meningeal irritation
-Focal neurological signs
- Seizures
- Hypertonia
- Vomiting & fever
- Signs of Hydrocephalus
- Papilledema

3rd Stage:

- Stage of come / unconsciousness
- Hemiplegia
- Paraplegia
- Hypertension
- Decerebrate posturing
- Deterioration of vital signs
- Death

Diagnosis:

- High index of suspicion
- History of contact with Tuberculosis
- ESR
- X-ray chest
- Lumbar puncture

CSF:

- Cell count: increased (lymphocytes)

-Sugar: decreased

-Proteins: increased

-ZN stain

-Culture for AFB

Mantoux test

BCG (5mm induration on day III)

Gastric lavage for AFB

CT Scan Brain

Treatment:

A-Specific-

- Start with 4 drugs (12 months)

- 1-Rifampicin	10-20 mg/kg)
- 2- INH	10-20 mg/kg
- 3- Pyrazinamide	30 mg/kg
- 4-Streptomycin	20-30 mg/kg

B- General:

- Prednisolone	2 mg/kg/day (4-6 weeks)
- Phenobarbitone	5 mg/kg/day
- Mannitol 20%	10 ml/kg
- Feeding by N/G tube	

Complications:

-Cranial nerve palsies

- 3^{rd}, 6^{th}, 7^{th},
- Optic atrophy (Blindness)
- Deafness
- Hydrocephalus
- Hemiplegia
- Epilepsy
- Mental retardation
- Diabetes inspidus
- Tuberculoma

Prognosis:

Depends upon

1- Age of Patients

2- Stage of disease

Stage 1: 100% cure

Stage 2:

Stage 3: 30-50% mortality

75 % of survivors have neurologic sequelae

Without treatment invariably fatal

Neonate of Tuberculous Mother:

- Possible routes of infection:

1- Transplacental:
Primary infection in liver or lungs through ductus venosus

2- Aspirate of infected amniotic fluid:
Lungs are involved

3- Ingestion:
Liver

High Risk Pregnant Mother:

Tuberculin skin test:

Positive: Chest X-ray

(shielding)

Negative: Clinically well

no treatment

- **Asymptomatic Tuberculous Infection:**

Treatment deferred until delivery

- **Active Tuberculosis:**

always treat

INH, Rifampicin, Ethambutol

Avoid (Streptomycin, Pyrizinamide, Ethionamide)

Suspected Tuberculous:

- Donot separate the infant !
- X-ray chest of mother

Abnormal:

- Through evaluation
- History
- Physical Examination
- Sputum for AFB & C/S

Evidence of current TB:

INH treatment for infant negative sputum (3m)

- At 3 month: mantoux test & X-ray chest

Positive (>5mm)

full investigations.

-ve investigations

INH,Rifampicin for 3 months

Or INH for 9-12 months

+ve investigations Full Treatment

Negative : Discontinue INH, Give BCG

Perinatal (Congenital) Tuberculosis:

- Presents by 2nd or 3rd week

- Similar to sepsis / other congenital infections

- Respiratory distress

- Poor feeding

- Lethargic, irritability

- Hepatosplemomegaly

- Lymphadenopathy

- Abdominal distension

- Failure to thrive

- Skin lesion

- Manifestations vary with site & size of caseous lesions

-Meningitis in 30-50% cases

Diagnosis:

- Suspect if response to a antibiotic & supportive therapy is poor

- Maternal & family history of TB

- Mantoux test (negative initially)

-Early morning Gastric lavage for AFB

- X-ray chest Miliary, hilar lamphadenopathy

- Direct acid fast stain on

- Middle ear discharge

- Tracheal aspirate

- Bone marrow

- Biopsy film (liver, lymph node)

-CSF examination & culture

- Palatal examination if possible

BCG Vaccination:

- Attenuated bovine strain
- Bacillus Calmette Guerin (BCG)
- Introduced in France 1921 orally !
- First used in Sweden 1927
  England 1948
- **Dose:** 0.05 ml at birth
  0.1 ml over one year of age
- **Route:** Intradermal
  Right shoulder,
  Wheel of 5-7 mm

Prevaccine Tuberculin test

. Normal Reaction:

2 weeks- red tender swelling

4 weeks – abscess / ulceration

6-8 weeks- scar formation

(Tell mothers about the response)

Donot apply any medicine

. Accelerated BCG Reaction:

> 5mm papule by day III

indicates evidence of Tuberculosis

Complications:

- Abcscess
- Large ulcer
- Lymphadenitis

usauly due to large dose / subcutaneous injection

Efficacy:

-50% effective in preventing pulmonary TB

- 50-80% effective in preventing TBM

Tuberculin Skin Test

(Mantoux Test)

- **Dose :** 0.1 ml (5 T.U . Of PPD)
- **Route :** Intradermal
  (1.0 ml syringe with 25-27 gauge needle)
- Measure induration (not Erythema) after 72 hrs
- Positive : > 10 mm
  5-9 mm
- Negative : < 5mm
- Multipuncture tests (sclevo) not as accurate as Mx

False Negative:

-Poor technique / misreading

- 6-10 weeks after infection

- Very young age < 6 weeks of age

- Malnutritiion

- Immunosuppression, Steroids

- Viral infections

- (Measles, Mumps, Rubella)

- Measles Immunization 6 wks

- Over whelming TB

- (TBM, Miliary)

- 10-50% donot react initially

False Positive:

- Cross sensitization

- BCG

Thank You