

TB MENINGITIS - CASE REPORT

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TB MENINGITIS

Meningitis (from ancient Greek/ Meninks, “Membrane” and the medical suffix- its- “Inflammation”) is an acute inflammation of the protective membranes covering the brain & spinal cord, known collectively as the Meninges. The inflammation may be caused by infection with viruses, bacteria, or other microorganisms and less commonly by certain drugs. Tuberculous Meningitis is Mycobacterium tuberculosis infection of the Meninges.

EPIDEMIOLOGY

Meningitis is annotifiable disease in many countries, the exact incidence rate is unknown. As of 2010 it is estimated that it resulted in 4,20,000 deaths in worldwide.

RISK FACTORS

It can develop in children & adult of all ages.

- * HIV/ AIDS
- * Excessive alcohol use
- * Weakened immune system
- * DM

CAUSES

Microorganisms-Bacteria-Neisseria meningitides

Streptococcus pneumonia

Haemophilus influenza type B

Listeria monocytogenes

Mycobacterium tuberculosis

VIRAL - Entero virus

Herpes simplex virus

Varicella zoster virus

FUNGAL – Histoplasma capsulatum

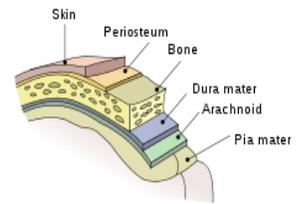
Candida

PARASITIC – Angiostrongylus

Schistosoma

PATHOLOGY

Mycobacterium tuberculosis of the meninges is the cardinal feature and the inflammation is concentrated towards the base of the brain. When the inflammation is in the brain stem subarachnoid area, cranial nerve roots may be affected. The symptoms will mimic those of space-occupying lesions. Infection begins in the lungs and may spread to the meninges by a variety of routes.



Blood-borne spread certainly occurs and 25% of patients with miliary TB have TB meningitis, presumably by crossing the blood-brain barrier, but a proportion of patients may get TB meningitis from rupture of a cortical focus in the brain (a so-called **rich focus**); an even smaller proportion get it from rupture of a bony focus in the spine. It is rare and unusual for TB of the spine to cause TB of the Central Nervous System, but isolated cases have been described

CLINICAL MANIFESTATION

Fever and headache are the cardinal signs.

INITIAL SYMPTOMS

- Headache
- Low grade fever
- Fatigue
- Malaise
- Nausea, vomiting
- Neck stiffness
- Positive kernig’s sign
- Positive Brudzinski’s sign



LATE SYMPTOMS

- ◆ Irritability
- ◆ Unconsciousness
- ◆ Confusion

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- ◆ Changes in mental status
- ◆ Coma

ASSESSMENT

HISTORY

- Recent illness
- Previous history of DM/HIV
- History of use of alcohol
- History of recurrent infection
- Detailed review of all systems

PHYSICAL EXAMINATION

Complete physical examination should be carried out including with neurological assessment.

INVESTIGATIONS

Investigation should be tailored to the possible cause and symptoms.

- Total count and Differential count
- Renal Function Test
- Liver Function Test
- Chest X ray
- Urine culture/ microscopy
- Electrolytes

SPECIAL INVESTIGATIONS

- CT scan – Features consist of TB meningitis
- MRI scan – To elicit features consist of TB meningitis
- Lumbar puncture – CSF analysis – which may show low glucose, high protein level
- USG Doppler study
- Nucleic acid amplification tests
- Skin test for tuberculosis (PPD)
- Blood culture

TREATMENT

- ❖ ATT therapy
- ❖ Anticonvulsants
- ❖ Steroids – Dexamethasone
- ❖ Diuretics – Manitol

PREVENTION

- ✓ BCG vaccination can be used to control the infection in young children.
- ✓ To treat the positive patient to help control the spread of the disease.

NURSES ROLE

- Maintain head or neck in midline position, support with small towel or roll or pillow.
- Observe for seizure activity and protect from injury.
- Restrict fluid intake as indicated.
- Monitor temperature as indicated
- Decrease extraneous stimuli and provide comfort measures like back massage, quiet environment, soft voice.

COMPLICATION

- seizures
- hearing loss
- increased pressure in the brain (intracranial pressure)
- brain damage
- stroke
- death

Case Report

A 26 year old male admitted in MGMC & RI, Puducherry presented with the complaints of head ache, since 10 days, Intermittent low grade fever with chills & rigor for past 15 days. He had history of involuntary movements of upper & lower limbs. Patient had one episode of focal seizures including right upper limb and lower limb, lasting for > 30 sec with uprolling of eyes and he was disoriented. He had a history of alcoholism since 10 years.

Laboratory Investigations were suggestive of Inflammation with elevated ESR & Neutrophil count. LFT revealed elevated

Protein and SGPT levels. CSF analysis showed elevated Lymphocytes levels. MRI – BRAIN revealed TB Meningitis, with Acute Infarct in the Striato Capsular Region bilaterally & mildly prominent Ventricular cyst.

Finally Patient was diagnosed as TB Meningitis with Alcohol Withdrawal Syndrome. Patient was put on, Inj.Ceftriaxone 1 gm IV bd, Inj.Vancomycin 1 gm IV bd, Inj.Dexa 8 mg IV tid, Inj.Artesunate 120 mg IV bd, Inj.Thiamine 100 mg IV bd, Inj.Levipill 500 mg IV bd, Inj. Haloperidol 5 mg IV bd, Tab. AKT- 4 1od.

With two weeks of follow up, general symptoms settled down. The patient went home stable.

Nursing Care

Nursing management of Mr.A with TB Meningitis is presented using Nursing process approach based on the problems / needs identified.

1. Nursing Assessment:

He complained headache and intermittent low grade fever with chills & rigor for past 15 days.

Nursing Diagnosis:

Hyperthermia related to brain infection.

Expected Outcome:

Maintains body temperature within normal limits.

INTERVENTIONS:

- Monitor the vital signs.
- Maintain I/O chart.
- Provide ample fluids orally or intravenously.
- Administer antipyretic medications as per order.

EVALUATION:

There was a fluctuation in his temperature due to infection.

2. NURSING ASSESSMENT

He had history of involuntary movements of upper & lower limbs.

Nursing Diagnosis:

Impaired mobility related to immobilisation.

Expected Outcome:

Physical mobility is enhanced.

INTERVENTIONS:

- Assess the range of motion of the extremities.
- Encouraged to move the extremity as tolerated.
- Demonstrated range of motion to full ability.
- Maintained muscle tone by encouraging her to do muscle strengthening exercises.

EVALUATION: There was only marginal improvement in mobility as he had to continue with muscle strengthening exercise.

3. Nursing Assessment:

He was found to have one episode of focal seizures including right upper limb and lower limb, lasting for > 30 sec with uprolling of eyes and he was disoriented.

Nursing Diagnosis:

High risk for injury related to seizural activity.

Expected Outcome:

Injury is prevented.

INTERVENTIONS:

- ☞ Monitored the level of consciousness by Neurological assessment.
- ☞ Monitored for seizure activity .
- ☞ Ensured safety awareness such as raising side rails at all times and frequent observation.
- ☞ Administered anti convulsants as per ordered.

EVALUATION:

He did not develop any injury during his stay in the hospital.

REFERENCE

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CASE SCENARIOS – Dept of MSN

SCENARIO 1:

Mr.Y 45 years old got admitted in ICU with the complaints of acute chest pain radiating to shoulder that shows ECG changes?

- Identify the condition and presumptive ECG changes?
- As a nurse what is your role in the assessing and monitoring the ECG changes?
- What are all the possible nursing interventions?

SCENARIO 2:

Mr.Ramu 55 years old with hypovolemic shock and patient is on ABP monitoring?

- As a nurse how will you maintain the arterial catheter?

SCENARIO 3:

Mr. Y 40 years got admitted with severe dehydration admitted in ICU with CVP monitoring .The nurse gets a CVP reading of 12mmHg and has a doubt whether this is correct reading?

- Justify the statement of the nurse and outline the procedure for correct monitoring of CVP?
- Identify the incidence where CVP reading can be wrong due to faulty practices?

SCENARIO 4:

Mrs.A 35 years old with dyspnea admitted in casualty for further evaluation.Patient is on continuous cardiac monitoring .Patient is normotensive and manual pulse is 66 bt/mt but the saturation is not picking up and the waves are flat.

- Identify the reason for the above?
- What are the common errors occurring while monitoring O2 saturation

Answers in page no. 49