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Case Study

A Case Report of Pyrogenic Meningitis

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ABSTRACT

A 24-year-old woman presented with a progressively worsening headache, fever, vomiting, nausea, neck pain for 10 days. she had clinical signs of meningism. On admission, blood tests showed a normal C reactive protein and white cell count. Chest X-ray and CT of the head were normal. Cerebrospinal fluid (CSF) microscopy was Abnormal. CSF protein and glucose were in the abnormality. MRI of the head and cerebral angiography were also normal. The patient's clinical syndrome correlated with her virological diagnosis and no other cause of her symptoms was found. Her symptoms were self-limiting and improved with supportive management. This type of presentation is extremely rare in adult patients. The frequent causative organisms were *Streptococcus pneumoniae*. Therefore, repeat CSF analysis should be considered

Keywords: Pyrogenic Meningitis, cerebrospinal fluid (CSF), cerebral angiography, *Streptococcus pneumonia,* immunoglobulins, intracranial pressure

INTRODUCTION

Most commonly, bacteria reach the subarachnoid space and meninges via hematogenous spread. Bacteria may also reach the meninges from nearby infected structures or through a congenital or acquired defect in the skull or spine. Because white blood cells (WBCs), immunoglobulins, and complement are normally sparse or absent from cerebrospinal fluid (CSF), bacteria initially multiply without causing inflammation. Later, bacteria release endotoxins, teichoic acid, and other substances that trigger an inflammatory response with mediators such as WBCs and tumor necrosis factor (TNF). Typically, in CSF, levels of protein increase, and because bacteria consume glucose and because less glucose is transported into the CSF, glucose levels decrease. Brain parenchyma is typically affected in acute bacterial meningitis. However, fever, headache, and nuchal rigidity may be absent in neonates and infants. So-called paradoxical irritability, in which cuddling and consoling by a parent irritates rather than comforts the neonate, suggests bacterial meningitis. Seizures occur early in up to 40% of children with acute bacterial meningitis and may occur in adults. Up to 12% of patients present in coma. Accompanying systemic infection by the organism may cause

- Rashes, petechiae, or purpura (which suggest meningococcemia)
- Pulmonary consolidation (often in meningitis due to *S. pneumoniae*)

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- Heart murmurs (which suggest endocarditis—eg, often caused by *S. aureus* or *S. pneumoniae*).

Case Presentation

A 24-year-female presented with compliant of headache, fever, vomiting, nausea neck pain for 10 days. Patient was initially treated at Bhimavaram hospital now came here for further medical management. All necessary investigations done.

Patient details/Case presentation:

Age :24-YEARS
Wt :52 kg
Sex : FEMALE
Blood group : O^+ve
Symptoms :Blurring on vision
Exposure to light
Mild neck rigidity+
Kernings negative

Patient was treated conservatively with supportive medications. Now that patient was hemodynamically stable. Hence discharged.

Condition at the Time: PR: 80/min
Admission RR:22/min
BP:110/80mmhg
TEMP:Normal
Spo_2:98% with RA
CVS: S1+S2
LUNGS: NVBS
Surgery/Procedure : Medical management.

Investigations:

Relevant blood test results

- Initial blood results: haemoglobin 9.6 g/L, Total white cell count (TWCC) 8,400 Cells/cumm, Total Red cell count (TRCC) 3.5 Milli cells /cumm, ESR 1 h 60mm/hour, platelet count 1.81 lakhs cells /cumm, PCV-28%, MCV-80fl, SGOT-64U/L, SGPT-99U/L,
- Immunochromatographic test negative, no malarial parasites seen on blood film.
- HIV1 and 2 antibodies negative

CSF results:

Gross: Received 2.0ml of Turbid CSF.
Cell count: 690CELLS/CUMM
Pandys: Positive
DC: Polymorphs:65%
Lymphocytes:35%
Proteins: 97mg%
Glucose: 32mg%
Chlorides: 105mmol/1
Micro: Wet Smear Shows Few RBCS Predominantly
Polymorphonuclear Leucocytes and Occasional Lymphocytes.

ADA LEVEL : 6.0U/L

Microbiology and Virology results:

- Nasopharyngeal aspirate respiratory virus nucleic acid detection negative for enterovirus and the rest of the viral screen in respiratory PCR panel

Dengue Check: NS1Antigen: Non-Reactive
IgM Antibodies: Non-Reactive
IgG Antibodies: Non-Reactive (it is only screening Test, it has to be confirmed by ELISA Method)

Radiological investigations:

MRI BRAIN

Sequences: short & long TE, Multi ECHO in Multi PLANE

FINDINGS:

→ The cerebellar vermis and the cerebellar hemispheric parenchyma reverie no abnormality.
→ The mid brain, pons and medulla shows no mass lesion/focus of altered signal intensity.
→ The lateral ventricles, third and fourth ventricles are unremarkable.
→ The cerebral hemispheric parenchyma shows normal grey white matter differentiation.
→ The caudate and lentiform nuclei and the thalami are normal.
→ The corpus callosum, the anterior and posterior commissures are normal.
→ No areas of restricted diffusion.
→ No mid line shift.

The visualized nerves, including the trigeminal nerves seventh –eight nerves complexes appear normal. The internal auditory canals and their contents are normal.

MRV Revealed:

→ Hypoplastic left transverse and sigmoid sinuses –Normal variant.
→ Superior sagittal sinus, inferior saggital sinus, straight sinus, right transverse sinuses and sigmoid sinuses -Normal in coursed and caliber.
→ NO filling defects,
→ Visualized cortical and deep veins are normal.
→ No signs of CSVT.

Conclusion: No significant abnormality in brain parenchyma.

CT BRAIN (PLAIN)
Only non-contrast sequential axial section of brain were taken from vertex to base of the study reveals.

FINDINGS:

→ Bilateral cerebellar hemisphere shows normal attention.
→ No evidence of bleed is seen.
→ Bilateral basal ganglia are normal.
→ Ventricles, basal cisterns and sylvian fissures are normal.
→ Sella and suprasellar space are normal. No obvious pituitary lesions.
→ Brain stem and Bilateral cerebellar hemisphere are normal attention. No obvious focal lesions is seen.
→ Fourth ventricle is central and normal.
→ Bony cranium is unremarkable. No fractured noticed.
→ Mild right maxillary sinus mucosal thickening

IMPRESSION: No Significant Brain Parenchymal /Bony Abnormality.

Treatment
Despite the clinical diagnosis of meningitis, the patient was given antimicrobial therapy because her illness was indolent in onset, she remained generally well and there was minimal delay in undertaking the procedure. The advantage of this strategy is an improved rate of microbiological diagnosis in bacterial meningitis. In view of her normal CSF findings, she was managed supportively with intravenous fluids, analgesia and antiemetics. Management of enterovirus infections, as subsequently confirmed in this case, is also supportive.

Outcome and follow-up
The patient remained hemodynamically stable, and symptomatically improved during her 4-day admission. At follow-up in the infectious diseases clinic 1 week after discharge, she was well.

Learning points

- Normal cerebrospinal fluid (CSF) findings do not exclude viral meningitis.
- In the appropriate clinical setting, PCR testing of CSF should be performed even on samples with normal cell counts.
- Rapid return of PCR results could save money on hospital stay, further investigations and avoid unnecessary antibiotic use.
- It is important to consider common infections that are prevalent worldwide in the differential diagnosis of patients with tropical travel. In travellers, it can help to formulate two differential diagnoses: one taking account of the travel, and one ignoring it.
- Withholding antibiotics (if the clinical index of suspicion of *bacterial* meningitis is low) is a key step in antibiotic stewardship, as it increases the likelihood of obtaining a microbiological diagnosis, reduces bacterial resistance and complications of antibiotic overuse.

CONCLUSION

Finally, we concluded above data of the patient, Microbiology and Virology results and Radiological investigations (MRI BRAIN AND CT BRAIN). We finding the patient has suffer from bacteriological or virological meningitis and no any **significant** abnormality in brain parenchyma. The patient was given antimicrobial **therapy** because her illness was indolent in onset, she remained generally well and there was minimal delay in undertaking the procedure. The advantage of this strategy is an improved rate of microbiological diagnosis in bacterial meningitis.

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