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Case Report

Internal Medicine Section

Temporal Lobe Encephalitis Need not Always be Herpes Simplex Encephalitis: Think of Tuberculosis

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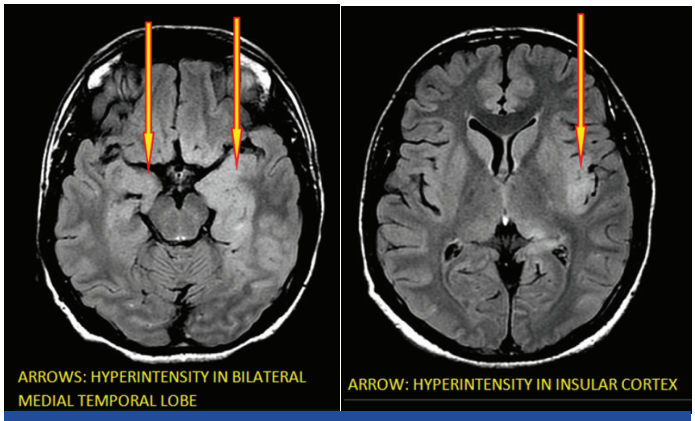
ABSTRACT

Historically, temporal lobe encephalitis is considered as a pathognomonic feature of Herpes simplex encephalitis. This rule may not always be true and we believe that clinicians should keep their differential open. We here report once such. Case of a 36-year-old Indian male who developed altered sensorium following a prodrome of headache and fever. Examination and imaging suggested Temporal Lobe Encephalitis (TLE). Herpes encephalitis was considered and he was started on anti-virals awaiting lumbar puncture reports. Cerebrospinal fluid (CSF) analysis for Herpes Polymerase Chain Reaction (PCR) turned out to be negative. Later, to our surprise PCR for tuberculosis (TB) was positive. CSF was 100% lymphocytic and Adenosine deaminase was 12. He was started on 5 drug anti-tuberculosis regimen following which he showed a significant clinical improvement. Given the prevalence of tuberculosis in the sub-continent, clinicians must be aware of this diagnostic possibility when a patient with TLE does not respond to anti-virals. Apart from disease specific therapy, multi-disciplinary approach involving speech therapy is warranted. An early aetiological characterization of TLE has both diagnostic and prognostic implications, failing which patient may succumb.

Keywords: Aphasia, Encephalopathy, HSV encephalitis, Tuberculous meningitis

CASE REPORT

A 36-year-old male, car driver, with no significant past medical history was brought in altered sensorium of one day duration. He had a prodrome of headache and fever preceding this for 3 days. He also had an episode of seizures of generalized tonic-clonic type. There was no history of trauma. His GCS was 14, E4V4M6. He was in altered sensorium and agitated. Cranial, motor and sensory nervous system examination was normal. Kernig's and Brudzinski were positive. Diagnosis of Meningo-encephalitis was considered. Blood investigations were normal. Imaging showed T2W and FLAIR hyperintensities, restricted diffusion and patchy enhancement post contrast in bilateral medial temporal lobe (L>R) [Table/Fig-1], the left insular cortex [Table/Fig-2], bilateral inferior frontal lobes (L>R) and bilateral cingulate gyri. Electroencephalogram revealed sharp wave discharge in T4 to T6 leads. Cerebrospinal fluid analysis was predominantly lymphocytic with high protein and low-normal glucose. Diagnosis of Herpes simplex virus (HSV) encephalitis was strongly considered. He was started on I.V acyclovir impending CSF analysis culture and Polymerase Chain Reaction (PCR) reports. Patient continued to have fever, He later developed global aphasia and his GCS worsened to 9, E4V1M4. His power decreased to 3/5 in the lower limbs. In the milieu of his worsening clinical condition, he was started on steroids. In view of clinical deterioration, MRI was repeated which was same as the previous one. Cerebrospinal fluid PCR for herpes was negative but was positive for M. Tuberculosis. He was finally diagnosed to have tuberculous encephalitis. His HIV ELISA was negative. CSF reports were as shown in [Table/Fig-3].



[Table/Fig-1]: MRI brain showing T2W and FLAIR hyperintensities, restricted diffusion and patchy enhancement post contrast in bilateral medial temporal lobe (L>R). **[Table/Fig-2]:** MRI brain showing T2W and FLAIR hyperintensities, restricted diffusion and patchy enhancement post contrast in the left insular cortex.

He was then started on streptomycin based 5 drug Anti-Tuberculosis Therapy (ATT) while continuing dexamethasone. After initiation ATT, he was gradually afebrile; his sensorium had slowly improved and power gradually recovered to near normal. He had persisting broca's aphasia. He was referred to speech clinic for further rehabilitation care. He made a significant recovery and was under regular follow-up. His steroid dose was gradually tapered. His CSF culture grew M. tuberculosis. He had finished his course of ATT. He was doing fine and was under regular follow-up.

Cell count	98 (99% LYMPHOCYTIC)
Glucose	47% of serum glucose
Protein	123mg/dl.
CSF ADA	12 u/l
PCR for M. Tuberculosis	Positive
PCR for HSV,VZV,JE,MUMPS and Enterovirus	Negative
CSF culture	Sterile

[Table/Fig-3]: CSF reports.

DISCUSSION

Encephalitis, the inflammation of brain parenchyma, is caused most often by viruses and rarely by bacterial, protozoan, and autoimmune aetiology. Early diagnosis of the causative organism is the key. HSV is mostly the causative organism and by itself accounts for about 5-10% of cases of encephalitis [1]. Other viral causes of encephalitis encountered include Epstein Barr virus, Varicella zoster virus, and Enterovirus etc [2]. HSV encephalitis is characterized by the involvement of bilateral medial temporal lobe, insular cortex and cingulate gyrus [3]. Involvement of the temporal lobe explains for the occurrence of personality changes in these patients. MRI is the imaging modality of choice and is abnormal in 90% of the patients [1]. Nucleic acid testing by HSV PCR is currently the most sensitive and specific test and have replaced the need for brain biopsy [1].

EEG showing slowing of periodic lateralized epileptiform discharges can be used as supportive diagnosis. MR imaging was classical of HSV in our case but the definitive investigation of HSV encephalitis, the HSV PCR, turned out to be negative.

TB is a very important healthcare concern in India, which alone accounts for about 1/4th of global incidence. CNS tuberculosis accounts for about 1% of all cases of tuberculosis and about 5-10% of cases of extra-pulmonary tuberculosis [4]. No sex predisposition is defined and is known to occur in children and young adults. Central nervous system involvement of TB occurs as meningitis which is usually the most common presenting form but may also occur in the form of focal tuberculoma or arachnoiditis. Early diagnosis and treatment is the key as prognosis depends on stage of TB in which it was diagnosed [5].

While evaluating a case of this kind due attention must be paid to elicit past or family history of TB. History of prodrome of cough should be carefully sought. Neurologic examination may reveal signs of meningitis. Careful auscultation must be done to look for lung pathology. Fundoscopic examination may reveal choroidal tubercles. MR imaging, which is better to CT, may show a meningeal enhancement in meningitis or periventricular enhancement in ependymitis or ischemic infarcts in vasculitis and/or dilated ventricles in hydrocephalus. CSF analysis is marked by lymphocyte predominant fluid with low glucose and high protein. CSF adenosine deaminase can be used as a reasonable diagnostic tool [6] but demonstration of the organism by culture remains the gold standard. PCR for TB can be used as substitute to culture with equivalent sensitivity and specificity as it gives rapid results on which treatment decision can be banked [7].

General principles of management are same as that of followed for pulmonary tuberculosis. Controversies exist regarding the duration of treatment. Majority of authorities were in favor of a 2 month intensive phase 4 drug ATT followed by a continuation phase of 7 months with 2 drug ATT. Due to poor CNS penetration etambutol may be substituted by streptomycin. There is a growing evidence for the probable role of steroids in TBM [8,9]. Standard regimen is to give intravenous dexamethasone at 0.4 mg/kg per day and then tapering by 0.1 mg/kg per week until the fourth week, when 0.1 mg/kg per day was administered. This is then followed by oral dose of 4 mg/d for one week and tapering by 1 mg per week until the fourth week, when 1 mg/d was administered and then stopped.

Management should also focus on rehabilitation for those with speech and motor deficits. Due to involvement of left temporal lobe, these patients are at risk of developing dysphasia [10,11]. Early recognition and prompt care in these aspects will help limit speech and motor disabilities.

CONCLUSION

Given the prevalence of tuberculosis in the sub-continent, clinicians must be aware of this diagnostic possibility when a patient of temporal lobe encephalitis does not respond to anti-virals.

Early aetiological characterization of temporal lobe encephalitis is must for this and dictates management and prognosis, failing which patient may succumb.

Aphasia is a common complication in these patients and hence a multi-disciplinary approach including a speech therapy is required in needy.

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