Original Article

Neurological (CNS) manifestations of tuberculosis in adults - A clinical profile

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Abstract

Aims and Objective: 1) To see for neurological manifestations of tuberculosis in adults. 2) To see for the mortality and morbidity in neurological tuberculosis. 3) Diagnostic value of serum / CSF ADA (Adenine deaminase) in neurological tuberculosis.
Key Words: Tuberculous meningitis, arachnoiditis, tuberculomas.

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INTRODUCTION

Tuberculosis is a major health concern in India. Almost 1.5 % of total population is suffering from active tuberculosis in India at least about 25% of the total tuberculosis cases are highly infections. With coexisting HIV disease the incidence of tuberculosis is more common. CNS tuberculosis is the most deadly form of tuberculosis because of high mortality and morbidity. CNS Tuberculosis constitutes 2%of all cases of tuberculosis. The challenge in present era is that occurrence of extra pulmonary tuberculosis is on rising trend and Multidrug resistant tuberculosis is already a global threat. With very few newer antituberculous drugs we have to face this global threat. CNS tuberculosis though uncommon before the age of 6 months it is frequently noted in the 3rd decade. The occurrence is more common in immunocompromised individuals and also in HIV infections. Clinical picture of CNS tuberculosis is variable and may range from incidental detection to catastrophic events. More is the delay in the initial suspicion more are the chances of having residual neurological damage. Clinical course of CNS tuberculosis may take any of the following forms

1. Tuberculous meningitis
2. Tuberculomas
3. Tuberculous endarteritis and periarteritis causing motor deficits
4. Tubercular brain abscess
5. Tuberculous pachymeningitis
6. Tuberculous arachnoiditis
7. Hydrocephalus
8. Multiple cranial nerve palsies

MATERIALS AND METHODS

Sample size: About 100 cases of adults coming to OPD/ IPD of Bharati Hospital Sangli with suspected CNS tuberculosis were included in the study. Necessary cases hospitalised according to their general status. Informed consents were obtained from patient/ relatives for the patient inclusion in the study .patient participation were according to the inclusion criteria. All initial entries were documented in the proforma sheet and in hospital progress report was noted on day to day basis. Our study was limited for in hospital admission period only and follow up records was not a part of the study. Final outcome was recorded at the time of discharge. All patients received the appropriate medical care and underwent all investigations mentioned in the proforma.

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Neurological / neurosurgical opinion was taken when necessary.

Diagnostic Criteria

1. CT/MRI suggestive of - TB/TBM
2. CSF picture suggestive of – TBM
3. CSF ADA levels
4. TB elsewhere in the body
5. IGRA (Interferon Gamma Release Assay) – when needed

Inclusion Criteria

1. All adults above the age of 18 years with clinical picture suggestive of CNS tuberculosis
2. Diagnosed cases of CNS tuberculosis referred to us for tertiary care
3. Asymptomatic patients accidentally detected to have CNS tuberculosis

Exclusion Criteria

1. CNS tuberculosis in paediatric population
2. CNS tuberculosis in immunocompromised patients /HIV patients

Investigations

1. Routine haemogram and ESR
2. LFT/ RFT
3. BSL levels
4. Chest x-ray
5. CSF ADA levels
6. CT brain / spine
7. MRI brain /spine
8. Fundoscopy
9. CSF examination for
10. Cytology
11. Biochemistry
12. CSF ADA values
13. ZN /GM staining
14. CSF culture for AFB

OBSERVATIONS AND RESULTS

Observations and results made at the end of the study. Statistical analysis was done as per requirements. Conclusions were drawn based on the results and statistical significance.

OBSERVATIONS

Following were the observations

1. 64% cases of TBM were in the age group of 20 to 40 years.
2. Male to female ratio was- 3:2
1. Onset of illness
    i. Fulminant -20%
    ii. Acute--------40%
    iii. Subacute----20%
    iv. Chronic------20%
2. Occurrance of various symtoms
    1. Fever 92%
    2. Headache 84%
    3. Vomiting 68%
    4. Altered sensorium 70%
    5. Convulsions 44%
    6. Visual ditubances 32%
    7. Motor weakness 44%
    8. Constitutional symptoms 58%

CSF findings in TBM

Table 1a: RANGE OF CSF PROTEINS IN CSF

Sr. No	Protein Level	Cases	Percentage
1	10-50 MG%	8	16
2	50-100MG%	12	24
3	100-150MG%	8	16
4	150-200MG%	10	20
5	200MG%	12	24

Table 1b: RANGE OF CSF SUGAR LEVELS IN CSF

CSF SUGAR	CASES	PERCENTAGE
20-40	10	20
40-60	16	32
60-80	16	24
80-100	4	8
100 and above	8	16

Table 1c: CSF WBC COUNT

Sr. No.	WBC Count	Cases	Percentage
1	Less than 100	12	24
2	100-200	12	24
3	200-300	6	12
4	300-400	8	16
5	400-500	2	4
6	500-600	0	0
7	600-700	4	8
8	700 and more	6	12

CSF ADA levels in tuberculous meningitis

In our study CSF ADA levels were found to be 12 to 92 U/L in all cases with proven tuberculous meningitis. 10 U/L as cutoff value for diagnosis of TBM is accepted by many investigators. the sensitivity of the test as per many studied observations is 94.73%; specificity 90.47%, positive predictive value is 90.00 % and negative predictive value 95.00%, and so it can be concluded that ADA estimation in CSF is not only simple, inexpensive and rapid but also fairly specific method for making a diagnosis of tuberculous etiology in TBM, especially when there is a dilemma of differentiating the tuberculous etiology from non-tuberculous. For this reason CSF ADA estimation in TBM may find a place as a routine investigation.

Commonest neurodeficits observed were as follows

1. Altered sensorium----20%
2. Hemiparesis----------12%
3. Parapiegia----------4%

4. Quadriplegia----------4%
5. Cranial nerve palsy in descending order of frequency
    i. 2nd nerve in 40%
    ii. 9th and 10th in 36%
    iii. 6th nerve in 14%
    iv. 3rd nerve palsy in 12%
    v. 12th nerve palsy in8%

Final outcome of disease

i. Recovered without neurodeficit 56%
ii. Recovered with neurodeficit 36%
iii. Expired 8%

Staging of disease

i. Stage I 32%
ii. Stage 2 36%
iii. Stage 3 20%

CONCLUSIONS

Tuberculous meningitis accounts for almost 82% of cases of CNS Tuberculosis TBM in adults represents reactivation of established focus in subarachnoid space our study showed a male preponderance in getting this disease. Also it was noted that common age of affection was between 20 to 30 years. Past history of tuberculosis elsewhere was seen in a small class. Extra neural tuberculosis was seen in 36% cases. Even though BCG vaccination was done in most of the individuals it did not seem to give any protection against TBM. Altered sensorium hemiplegia and hemiparesis were commonest neurodeficits coupled with cranial nerve palsies. Only 36% cases had papilloedema. Though various studies demonstrate isolation of AFB from CSF as a varying factor it was not isolated in our study. CT scan showed hydrocephalus, tuberculomas. In one case, choroid tubercle was also noted. Death was reported in 4 individuals. Otherwise all improved with standard antituberculous treatment protocol. CSF to serum ADA was an inherent part of our study and we concluded that ADA was a very good marker for detection of tuberculous meningitis.

1. Ada is a good marker in diagnosis of tuberculosis any where in the body.
2. Extraneural tuberculosis can be coincidentally detected in many cases.
3. Bcg vaccination is no gurantee for absolute protection.
4. Reduction in csf chlorides can taken as a more approprite marker in tuberculous meningitis.
5. Isolation of tubercle bacilli by staning and culture even with concentration method is difficult.
6. Multiple cranial nerve palsies stage 2 and 3 of disease with fulminant or acute onset were associated with high mortality.

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