



Clinical Profile of Acute Bacterial Meningitis

KEYWORDS

Meningitis, Neck rigidity, Kernick's sign, Fever

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ABSTRACT

Bacterial meningitis is an acute purulent infection within the subarachnoid space¹. It is associated with a CNS inflammatory reaction that may result in decreased consciousness, seizures, raised intracranial pressure (ICP), and stroke. Meningitis can present as either an acute fulminant illness that progresses rapidly in a few hours or as a subacute infection that progressively worsens over several days. The classic clinical triad of meningitis is fever, alt. sensorium, and nuchal rigidity, but the classic triad may not be present. The aim of the study was to know the clinical profile of acute bacterial meningitis in adults, hence a cross-sectional study was carried out in a tertiary centre, teaching hospital, on patients hospitalized due to fever in the period of 2010-2011.

Result : *In the present study most common etiological agent was *Streptococcus pneumonia* and 82.5% of patients were fully recovered.*

INTRODUCTION

Acute infection of the nervous system are among the most important problem in medicine because early recognition, efficient decision making and rapid institution of treatment can be lifesaving. Acute Bacterial Meningitis is one of these clinical distinct syndrome. Acute Bacterial Meningitis is most common suppurative infection of central nervous system. Bacterial meningitis remains an important public health issue, despite the availability of safe and effective vaccines against many of the common pathogens causing bacterial meningitis.

Approximately 1-2 million cases of bacterial meningitis occur worldwide. Acute bacterial meningitis is at least ten times more common in developing countries than in the rest of the world and is almost always fatal without treatment. Survival depends on accurate diagnosis and the early administration of antibiotics, neither of which is easy to achieve when resources are limited.

So, present study was conducted to know the most common presenting features in patients with acute bacterial meningitis in our institute and to evaluate the clinical profile, common symptoms, signs, etiology causing disease, with outcome and various prognostic factors affecting final outcome.

AIMS AND OBJECTIVES

The aim of the present study was to "STUDY THE CLINICAL PROFILE OF ACUTE BACTERIAL MENINGITIS"

- For this purpose, following objectives were undertaken.
- To study the various etiology of Acute Bacterial Meningitis.
- To study the prognostic factors affecting the final outcome in Acute Bacterial Meningitis.
- To study the mortality and morbidity data on Acute Bacterial Meningitis.

MATERIAL AND METHODS

The present study was carried out in the department of internal medicine, in our institute.

All patients having met inclusion Criteria were taken in the study. Total 40 patients were taken in the study after taking their informed written consent.

Inclusion Criteria:

Age > 12 years

Patient diagnosed to have meningitis by having any 2 of following :

- Classical triad of meningitis (Fever, Neck rigidity, Altered consciousness)².
- CSF profile showing changes of pyogenic meningitis (CSF cell count between 10 – 10,000 cells/cu.mm.; CSF protein >45mg ; CSF glucose <40mg)¹.
- Patient having positive CSF culture

Final outcome of patient available.

All the patients underwent complete clinical examination & Neurological examination with particular reference to the consciousness level and signs of meningeal irritation.

Exclusion Criteria

1. Age less than 12 yrs.

OBSERVATION AND RESULTS

Sex Distribution

Table 1

Showing the sex distribution in the cases included in the study:

Sex	No. of Cases	Percentage
Male	23	57.5
Female	17	42.5
Total	40	100.00

The above table shows that out of 40 patients 23 were male & 17 were female.

So Male to Female ratio is 1.3:1 in this study.

So male patients shows higher incidence of Acute Bacterial Meningitis in this study.

This is perhaps because of the fact that social negligence to women in this society to seek hospital help more than male.

Age Distribution

Table 2:
Showing the age distribution of the patient included in the study:

Age (In years)	No. of Patients	Percentage
15 – 29	27	67.5
30 – 44	8	20
≥ 45	5	12.5
Total	40	100

Above table shows that out of 40 cases 27 cases occur in 15 – 29 years of age, 8 cases in 30 – 45 years of age group and 5 cases in 45 or more age group.

So Acute Bacterial Meningitis is more common in younger patient mostly less than 30 years of age.

The youngest patient in study was of 15 years and oldest patient was of 55 years with mean age 27.53 in this study.

Symptomatology :

The most common symptom in Acute Bacterial Meningitis is Fever in the study (87.5%) followed by Alt. consciousness (72.5%) followed by Headache (60%) followed by Vomiting (57.5%) followed by Convulsion (42.5%).

Meningeal Irritation sign

Showing the incidence of meningeal irritation sign in the study.

Neck rigidity was present in 38 cases out of 40 cases in patient on admission. So 95% of patients in the study show this sign positive on admission.

Kernick's sign found positive in 26 cases out of 40 patients (65%), positive Brudzinski's neck & leg sign was found in 17.5% of patient on admission.

So neck rigidity was the most common sign present in 95% of patient included in the study.

Glasgow Coma Score on admission

Showing the incidence of GCS on admission in the study.

The complete GCS of 15 was seen in only 10 patients and with lowest score of 3 was found in 2 patient only.

In between score of 9 – 14 was found in 16 patients in the study, with score of 4 – 8 was found in 12 patients in the study.

CSF Culture Positivity

Showing the results of CSF Culture report in the study 50% of patients in the study show positive report and from 50% of patients no pathogen was isolated from CSF.

Etiological Classification

Table 3:
Shows the Pathogens isolated in the study.

Pathogen	No. of Patient	Percentage
No Pathogen isolated	20	50
Streptococci Pneumoniae	12	30
N. Meningitides	1	2.5
H. Influenzae	1	2.5
Staphylococci Aureus	1	2.5
Klebseilla Pneumoniae	2	5
Pseudomonas Aeruginosa	3	7.5
Total	40	100

Above table shows that in 50% of patients there is no pathogen isolated.

Streptococci Pneumoniae is the most common pathogen isolated in 12 patients.

CT FINDING

CT scan in patients in this study was abnormal in 55% and in 45% it was normal.

Final Outcome

The complete recovery with out any residual defect was found in 33 out of 40 patient in the study, residual defect was in 3 patients and 4 death occurred in the study

CSF PROTIEIN LEVEL IN STUDY

Showing the CSF Protein level in Patients in the study with cut of value of 300mg%

CSF Protein level <300mg% was in higher percentage (67.5%) of patient.

CSF Protein level ≥300mg% was only in 12 patients(30%).

CSF Cell Count in study

Showing the CSF cell count level in the study with cut of value of 500cells/Cu. mm.

Out of 40 patients 22 had cell count <500 about 55% in this study.

And about 18 patients had cell count ≥500 (45%) in this study.

Minimum count found was 15cells/cu.mm and maximum CSF Cell count was 3800cells/cu.mm with mean value in study was 705.25 cu/mm.

CSF Glucose level

CSF Glucose level <40 were found in 20 out of 40 patients in present study.

And CSF Glucose level ≥40 was found in 20 out of 40 patients in this study.

CSF PROTEIN LEVEL

Among patients with CSF Protein count <300mg%, 88.9% patients had good outcome with 11.1% patients had unfavorable outcome in the study.

And in patients with CSF Protein count $\geq 300\text{mg\%}$, chances of favorable outcome was 69.3% with 30.7% chances of unfavorable outcome in the present study.

DISCUSSION

Age Distribution

Patients with age group of 15 – 29, are 67.5% of patients in present study whereas 71.1% in Amin et al study⁴.

And 20% patients in present study comes in 30 – 44 age of group with 20.6% in Amin et al study.

Likewise 12.5% of patients in present study comes in ≥ 45 age of group with 8.3% comes in Amin et al study.

Sex distribution:

In present study male patients were 57.5% & female patients were 42.5%.

In Amin et al study there were 59% male patients and 41% were female patients, likewise in A. Sonavane et al study 61% of male patients were there and 39% were female patients, and in L.M. Tang et al study there were 65.5% of male patients & 34.5% were female patients.

Male to female ratio in present study was found to be 1.35:1. In Amin et Al study M:F ratio found 1.4:1, in A.Sonavane et Al⁴⁵ study M:F ratio was 1.35:1 and in L.M.Tang et Al⁴⁶ study it was 1.9:1.

So sex distribution found in present study is well comparable to all other above mentioned study.

SUMMARY AND CONCLUSION

This study was carried out at our institute . The objectives were to study the clinical profile of acute bacterial meningitis. This study includes adult patients of either sex from rural and urban areas of our district and surrounding districts attending to this hospital. The study involved total 40 patients of Acute Bacterial Meningitis. Detailed history, appropriate investigation and monitoring were done in these patients.

The following conclusion can be done from the study.

- Most cases are seen in adult patients with mean age of 27.53 so acute bacterial meningitis is more common in the younger patients.
- More commonly seen in male sex with M:F ratio to be 1.3:1. So disease is more common in male.
- Most common symptom was fever found in 87.5% of patients. Altered consciousness on admission was found in 72.5% of patients in the study.
- Neck rigidity was found positive in 95% of patients.
- Most common pathogen isolated was *S. Pneumoniae* in 30% of patients.
- Mortality in this study was found to be 10% and residual defect in 7.5% of patients.
- The Study found that there is strong correlation of increase age to adverse outcome. So as age advances chances of adverse outcome increases.
- The study also found strong correlation of female sex to adverse outcome
- Altered consciousness on admission was not found to predict the poor outcome in this study.
- But low GCS score below 8 on admission show strong correlation with poor outcome.
- *S. Pneumoniae* showed highest mortality but didn't show statistical correlation to poor outcome.
- CSF Glucose level $\leq 40\text{mg\%}$ or CSF Glucose/S. Glucose level ≤ 0.4 , which are used in diagnosis in acute bacterial meningitis were not found to be predictor of poor outcome.
- CSF cell count ≥ 500 cells/cu.mm. was not found to be associated with poor outcome but CSF cell count ≥ 1000 cells/cu.mm. was found to be associated with poor outcome.

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