# SUMMARY & CONCLUSION

Bacterial meningitis remains an important cause of morbidity and mortality despite substantial progress in diagnosis and treatment.

The traditional diagnostic methods of CSF Gram staining and culture have, for many years, provided the clinicians with assistance in the diagnosis of bacterial meningitis. Despite that an early correct diagnosis may be obtained by visualisation of Gram-stained bacteria on microscopic examination of CSF deposit, this way may be difficult even in experienced hand and requires intact bacterial morphology. Cultural methods may take up to 48-72 hours for identification of the organism and bacteria must be viable. In addition, Gram-stained smear and culture may fail to prove the aetiology in patients already treated with antibiotics. Hence rapid tests for identification of bacterial antigens have been developed. These tests include counter immuno-electrophoresis, enzyme-linked immunosorbent assay, coaglutination and latex agglutination tests.

The objective of the present study is to identify the aerobic bacteria causing acute childhood meningitis in different ages and sexes and to evaluate different methods used for diagnosis.

This study was done on 35 patients admitted to meningitis ward of Embaba Fever Hospital with signs and symptoms suggesting meningitis during the period extending from February, 1997 to May, 1997.

All patients were subjected to lumbar puncture under complete aseptic conditions and CSF was examined chemically, bacteriologically by Gram staining and culture and serologically by latex agglutination test.

The physical examination of the CSF was turbid in the 35 cases and under tension.

The CSF chemical analysis by Combur's reagent strips are of value in rapid diagnosis of bacterial meningitis but without identification of the causative organism.

The causative organisms were detected in 21 patients (60%), as identified by latex agglutiliatination test. Gram-stained smear of CSF and its culture detected the causative organisms in 22 (62.9%) and 30 (85.7%) cases respectively.

Of these 35 cases, the causative organism was N.meningitidis in 20 cases (57.1%), S.pneumoniae in 3 cases (8.67%), H.influenzae in 12 cases (34.3%).

Bacteriological examination of cerebrospinal fluid (CSF) is not available in many parts of the world, and without knowledge of CSF glucose, protein, and white cells, a diagnosis of septic meningitis may be missed. Testing CSF Comber's 9 reagent strips that measure glucose, protein and leucocytes has given valuable results.

We tested CSF samples from our 35 children with suspected meningitis for glucose, protein, and lecucocytes with Comber's 9 reagent strips. The results were compared with those obtained from the laboratory and also interpreted as indicating bacterial meningitis. There was good agreement between the strip and laboratory method of estimating CSF glucose, protein, and leucocytes. All the cases had low glucose and high protein and WBC contents by the strip method (sensitivity 100%). No normal CSF was diagnosed as meningitis (specificity 100%).

The results indicated that CSF chemical analysis and Comber's 9 reagent strips are of value in rapid diagnosis of bacterial meningitis but without identification of the causative organism.

## *CONCLUSION*

1- The clinical suspition of acute bacterial meningitis depends on certain symptoms including fever, vomiting, irritability, convulsions and purpuric rash .

2- A diagnosis of acute bacterial meningitis cannot be mad on the basis of symptoms and signs alone but lumber puncture should be done .

3- The physical criteria of bacterial meningitis include turbid CSF with high tension .

4- Chemical analysis of C.S.F. of bacterial meningitis patients shows decrease in glucose level <50 mg/dl and increase in protein values more than 100 mg/dl .

5- The comber's 9 reagent strip is an easy, rapid and cheap method for chemical analysis and diagnosis of bacterial meningitis but cannot define the causative organism of bacterial meningitis .

6- C.S.F latex agglutination test is also a rapid and easy method for diagnosing bacterial meningitis with organism detection and should be routinely included in the methods of rapid diagnosis of bacterial meningitis but are not meant to replace CSF culture .

7- The Gram stain of the CSF is a rapid method of diagnosis with organism detection but because of the possibility of misidentification,results of culture and latex agglutination should be obtained .

## *RECOMMENDATIONS*

We recommend early and rapid diagnosis of acute bacterial meningitis to decrease the morbidity and fatality of the disease by using

1- Comber's 9 test strips to detect the glucose, protein and leucocyte content in CSF . These strips are better modified to be only the 3 patches of interest , further reducing the costs .

2- Latex agglutination for detection of bacterial antigens in CSF .

3- Gram stain for visualisation of bacteria in CSF .

These methods are cheap, easey and rapid wth high sensitivity and specificity , but negative results can't exclude a diagnosis of bacterial meningitis .

So we recommend these methods to be routine parts of the diagnosis of bacterial meningitis but not to replace the CSF culture and sensitivity .

Optimal management ( prophylaxis and treatment ) of bacterial meningitis depends on early and appropriate antimicrobial therapy [Xavier saez, et al., (1998) ].