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Diagnostics, other than Molecular: Diagnostic/laboratory methods (other than molecular)
A comparative analysis of different modalities in the diagnosis of tubercular meningitis in children at a tertiary care centre in India

A. Roy¹, C.P. Baveja¹, G.R. Sethi²

¹Microbiology, Maulana Azad Medical College, New Delhi, India ; ²Paediatrics, Maulana Azad Medical College, New Delhi, India

Objectives: To compare and analyze the various methods in the diagnosis of Tubercular Meningitis(TBM) in patients admitted at a tertiary care hospital.

Methods: A cross- sectional study was conducted over a period of 11 months, between December 2012 to October 2013. Patients in the age group of 6months to 12years admitted in the indoor facility of Department of Paediatrics of LNJP hospital having features of chronic meningitis were evaluated with detailed history, clinical examination and investigations. Diagnosis of Tubercular Meningitis was based on the positive results of Zeihl Neelsen Stain(ZN),Auramine O stain(AO),Lowenstein Jensen Media(LJ) culture or BACTEC MGIT 960 system on csf samples. A total of 50 patients met the enrolment criteria of chronic meningitis, which included varying combinations of symptoms like fever (n=40), altered mental status (GCS <14, n=28) neck stiffness (n= 28,)headache(n=18) of sub-acute onset lasting 2 weeks or more.

Results: 6 patients (all having a positive history of contact)) were diagnosed to have TBM by LJ culture. BACTEC MGIT 960 was positive in 100% of these cases, ZN in 1(16%) and AO in 2(33%)patients.All the positive isolates belonged to *Mycobacterium Tuberculosis* Complex and none belonged to Atypical Mycobacteria as per the MPT-64 immunochromatographic kit assay.The mean turnaround time for LJ was 25.5days while that for BACTEC MGIT 960 system was 13days . The sensitivity of LJ and BACTEC MGIT 960system were the highest, followed by AO and ZN. On comparing the proportions based on the diagnostic tests on the study subjects using McNemar's test, the results were found to be statistically significant(p value<0.05).

Conclusion: Given the serious and fatal implications of Tubercular Meningitis in children and poor sensitivity of conventional staining methods, BACTEC MGIT 960 system provides a valuable alternative to LJ culture providing a 100%sensitivity and major reduction in the turnaround time in the detection of Tubercular Meningitis.

DIAGNOSTIC MODALITY SENSITIVITY

LJ	100%
MGIT	100%
ZN STAIN	16%
AO STAIN	33%