Tuberculous meningitis: neuroimaging features, clinical staging and outcome

ABSTRACT

Forty-two patients diagnosed with tuberculous meningitis in Kuala Lumpur Hospital based on clinical criteria, cerebrospinal fluid analysis and response to antituberculous treatment over a seven year period were included in this study. Relevant information was obtained from patients’ medical case notes and neuroimaging findings were evaluated. The clinical presentation of patients was staged according to Medical Research Council for tuberculous meningitis. Fisher’s Exact Test was used to determine the correlation between the neuroimaging features, clinical staging and outcome of patients. 52.4% of patients had stage 2 disease, 28.6% stage 3 and the remainder stage 1 disease. 95.2% of patients had various neuroimaging abnormalities and only 4.8% had normal neuroimaging findings. The commonest neuroimaging findings were hydrocephalus and meningeal enhancement. 47.6% of patients survived without any complication. 23.8% developed morbidity either with minor or major neurological deficit and 28.6% had died at the end of the study period. Among patients with negative neuroimaging findings, one died and another one survived without any complication. Among patients with abnormal neuroimaging findings, 25% developed morbidity, 27.5% died and 47.5% survived without complication. The only neuroimaging feature significantly correlated with clinical outcome was the presence of hydrocephalus. Therefore, hydrocephalus is important in the prognosis of the disease and should be considered an indicator of poor clinical outcome. There was no significant correlation between clinical staging and clinical outcome, nor was there a significant correlation between clinical staging and individual neuroimaging features.

Keyword: Tuberculous meningitis; Neuroimaging; Clinical staging; Outcome