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Clinical predictors and outcome of HIV-associated cryptococcal and tuberculous meningitis in Thailand

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Objectives

Cryptococcal meningitis (CM) and tuberculous meningitis (TBM) are common etiology of CNS infections among HIV-infected individuals. Clinical and initial laboratory parameters cannot exclusively differentiated among them. CSF lymphocytic pleocytosis, decreased glucose and increased protein levels can be found in both infections. India ink staining, cryptococcal antigen assay, mycobacterial culture and PCR for MTB detection provide accurate methods for diagnosis, however these tests have several limitations and are not always readily available to many clinical laboratories. The aim of this study were to determine clinical features to differentiate between CM and TBM in resource-limited settings and to identify predictors of in-hospital mortality in both conditions.

Methods

Retrospective study of HIV-infected patients presented with CM and TBM was conducted at Nakhonpathom hospital, a 500-bed tertiary care hospital in central Thailand during January 1, 2011 and September 30, 2013. Patients' characteristics, clinical presentations, investigations and outcome were collected. Clinical and laboratory features were evaluated to identify factors to differentiate CM and TBM. Predictive values for in-hospital mortality were assessed.

Results

There were 109 patients, 80 (73%) had CM and 29 (27%) had TBM. The mean age was an 39.0 ± 10.1 years and 59 (54%) were male. Sixty-six patients (61%) had documentation of their HIV infection prior to hospitalization. One-third had history of opportunistic infections, 72% of which had TB. Patients with TBM were more likely to have a longer duration of illness (14 vs 7 days, p 0.05), depressed consciousness (52% vs 28%, p 0.02), low peripheral WBC (5,785 vs 6,690 cells/mm^3, p 0.03) and low platelet (218,154 vs 289,428 cells/mm^3, p 0.004), abnormal cranial imagings (82% vs 48%, p 0.002) including hydrocephalus (57% vs 27%, p 0.004) and brain infarction (29% vs 10%, p 0.03), high CSF WBC (52 vs 5 cells/mm^3, p 0.001) and elevated CSF protein (199 vs 68.5 mg/dl, p <0.001). In-hospital mortality of CM and TBM were 32% and 38%, respectively. Factors associated with dead among patients with CM included the presence of neck stiffness (76% vs 46%, p 0.01), alteration of consciousness (44% vs 21%, p 0.04), low CSF WBC (2 vs 8 cells/mm^3, p 0.02) and decreased CSF protein level (50 vs 80 mg/dl, p 0.03). High peripheral WBC count (8,250 vs 6,215 cells/mm^3, p 0.04) was the only variable contributing to mortality in TBM.

Conclusions

This study demonstrated various features to differentiate CM and TM, these included duration of illness, level of consciousness, complete blood count (peripheral WBC and platelet), presence of CT brain abnormalities and CSF profiles (WBC and protein level). Some clinical and CSF characteristics were found to be associated with mortality in CM, however peripheral WBC was the only predictor of outcome in TBM.