

## Estimation of cerebrospinal fluid cortisol level in tuberculous meningitis

Sir,

Mahale *et al.* addressed in their interesting study that the mean cerebrospinal fluid (CSF) cortisol level in tuberculous meningitis (TBM) patients was significantly higher as compared to aseptic meningitis patients and control subjects ( $P < 0.0001$ ).<sup>[1]</sup> Accordingly, the authors suggested that CSF cortisol level estimation could be considered as a rapid, relatively inexpensive diagnostic marker in the early identification of TBM along with CSF findings of elevated proteins, hypoglycorrhachia, and lymphocytic pleocytosis.<sup>[1]</sup> I presume that the clinical implication of that suggestion is questionable. This is based on the following two points.

First, the cut-off values of CSF cortisol were not established to be practically implementable in the Indian clinical setting.

Second, the use of biological markers, including adenosine deaminase (ADA) has been suggested to enhance the accuracy of the initial diagnosis of various infections, including meningitis. As a better alternative to CSF cortisol, I presume that CSF-ADA measurement could be considered as a simple, useful, and rapid diagnostic tool for the early recognition of TBM and evaluating anti-TB therapy in TBM patients in India. This is based on the following three points. (1) The accuracy of CSF-ADA has been recently studied in Indian TBM and non-TBM patients. The results indicated that CSF-ADA of 10 U/L as a cut-off value had 87.5% sensitivity and 83.3% specificity whereas the positive predictive value of the test was 87.5% and 83.3% negative predictive value. The

study concluded that CSF-ADA estimation is not only simple, inexpensive, and rapid but also a fairly specific method for making a diagnosis of TBM, especially when there is a dilemma of differentiating tuberculous etiology from non-tuberculous ones.<sup>[2]</sup> (2) Comparing ADA levels and polymerase chain reaction (PCR) in CSF has revealed that CSF-ADA is a more sensitive indicator than PCR for the diagnosis of TBM in an Indian cohort with suspected TBM. Using a cut-off level of  $>10$  U/L, CSF-ADA had the sensitivity of 92.5% and specificity of 97% for the diagnosis of TBM whereas PCR for TBM had a sensitivity of 44.5% and specificity 92% in the most likely TBM cases.<sup>[3]</sup> (3) Most recently, it has been found that even in low TB endemic areas, CSF-ADA measurement can be still used to early diagnose TBM. The best ADA cut-off in low TB endemic areas has been estimated to be 11.5 IU/L with 91% sensitivity and 77.7% specificity. If CSF-ADA ( $>11.5$  IU/L) estimation is combined with CSF glucose level ( $<65$  mg/dL) and leukocytes ( $\geq 13.5$  cell/mm<sup>3</sup>), the sensitivity and specificity will skip to 91% and 88%, respectively.<sup>[4]</sup>

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### Conflicts of interest

There are no conflicts of interest.

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