



## Letter to Editor

Comments on 'magnetic resonance venographic findings in tuberculous meningitis'<sup>\*</sup>

## ARTICLE INFO

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Dear Sir,

We read with the great interest the study by Bansod et al. published in December 2018, describing the prospective evaluation of the venous system in Tuberculous meningitis (TBM) [1]. However, we would like to point out certain issues.

The methodology sections mention outcome as Modified Barthel Index, while the statistical analysis suggests that logistic regression was done to see for factors associated with abnormal MR venography. It seems that the primary objective was to study the incidence of magnetic resonance venography abnormalities in patients with TBM and predictors of cerebral sinus venous thrombosis (CSVT) in TBM.

The study suggests that there is a possible association between severity of clinical symptoms like vomiting, encephalopathy, seizures, papilledema, vision impairment, and CSVT. However, it would be difficult to ascertain if these symptoms were a cause or an effect of CSVT, or these symptoms were primarily due to tuberculous meningitis.

Another important fact which needs mention is the time gap between diagnosis of tuberculous meningitis and CSVT; and day of admission on which CSVT was confirmed. In a recently published case report of a child with CSVT and TBM, CSVT developed eight weeks after diagnosis of TBM [2]. Also, it would be crucial to ascertain the time difference between symptoms at admission and diagnosis of CSVT (or performance of neuro-radiology). It is not uncommon on studies where neuroradiological findings (like Magnetic resonance venography (MRV) abnormality in the index study is the primary outcome), a higher degree of abnormalities are detected or reported. The over-reporting or increased accuracy in diagnostic studies with the focused outcome can be minimized by presenting of MRV to the radiologist (control data)

without the disease in question. It would be important to know the result of MRV at preliminary analysis and final re-analysis and the time difference between such analyses.

From the results, it is evident that patients will CSVT have associated focal deficits, worse stage, and more basal exudates. So, it would be incorrect to assume that worse Modified Barthel Index scores are due to CSVT alone.

Though the role of anti-coagulation in post-infectious is controversial, symptomatic CSVT, like in the index study, may have benefited by anti-coagulation. Also, most of the literature of post infectious CSVT has evolved from meningitis or complicated otitis media whose duration of active infection is significantly smaller compared to tuberculous meningitis. Anti-coagulation to cover the length of active infection in tuberculous meningitis would be the most prudent choice. In the above-mentioned case, there was new-onset cortical venous thrombosis inspite of anti-coagulation, which suggests that anticoagulation may be needed in TBM associated CSVT too [2]. Also, analysis between neuro-radiology and prior neuro-surgical intervention like ventriculo-peritoneal shunt, may throw light on additional risk factor for CSVT associated with TBM [3].

Though the timing of radiology is not overtly mentioned, radiological studies in TBM need to correlate the symptoms at the time of radiology and not at the admission, and the value of such a data cannot be less-emphasized. Such standardized reporting of the timing of event in question (e.g. CSVT) may lead to enhanced quality of study [4,5].

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**References**

- [1] Bansod A, Garg RK, Rizvi I, Malhotra HS, Kumar N, Jain A, et al. Magnetic resonance venographic findings in patients with tuberculous meningitis: predictors and outcome. *Magn Reson Imaging* 2018;54:8–14.
- [2] Dhawan SR, Chatterjee D, Radotra BD, Vaidya PC, Vyas S, Sankhyan N, et al. A child with tuberculous meningitis complicated by cortical venous and cerebral sino-venous thrombosis. *Indian J Pediatr* 2019;86:371–8.
- [3] Matsubara T, Ayuzawa S, Aoki T, Ikeda G, Shiigai M, Matsumura A. Cerebral venous thrombosis after ventriculoperitoneal shunting: a case report. *Neurol Med Chir (Tokyo)* 2014;54:554–7.
- [4] Dhawan SR, Sankhyan N. Additional details for improved reporting of tuberculous meningitis studies. *Clin Infect Dis* 2017;64:1804–5.
- [5] Marais BJ, Heemskerk AD, Marais SS, van Crevel R, Rohlwink U, Caws M, et al. Standardized methods for enhanced quality and comparability of tuberculous meningitis studies. *Clin Infect Dis Off Publ Infect Dis Soc Am* 2017;64:501–9.

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