

## Clinical Presentation and Outcome of Children with Brain Abscess

Dear Editor

We read with great interest the article titled “Clinical profile and outcome of brain abscess in children from a tertiary care

hospital in eastern Uttar Pradesh” by Prasad *et al.*<sup>[1]</sup> They have described the clinical profile and outcome of 30 children with brain abscess. However, we wish to add a few points.

The authors have described only 13 children had recovery without any motor deficit and 5 children died. However, it would have been better to perform any univariate analysis to determine the risk factors or predictors of poor clinical outcome. Previous clinical studies have shown that decreased Glasgow coma scale, presence of comorbidities, a higher degree of C-reactive protein elevation, a higher degree of leukocytosis, diagnostic delay, rapid progression of the infection before hospitalization, and large size of brain abscess are associated with poor clinical outcome, apart from intraventricular rupture of brain abscess as found in the current study. On the other hand, culture positivity, the grade of fever at presentation, and age/gender are nonsignificant in determining the outcome.<sup>[2]</sup> The authors also could have measured the short term clinical outcome more objectively by using scales such as the Glasgow outcome scale (GCS) or pediatric cerebral performance category scale and the factors associated with favorable/unfavorable outcomes.

Similarly, for a more objective description of radiological findings, the authors could have used the imaging severity index (ISI) for the brain abscess, which includes five parameters, location, number, diameter, degree of perilesional edema, and midline shift, which has already been found to have a good negative correlation with GCS at presentation and positive correlation with adverse outcome (when ISI > 8).<sup>[3]</sup> Moreover, they have not described whether the one patient with fungal abscess due to candida species had any specific radiological finding, distinct from bacteriological brain abscess. It has been demonstrated that multiplicity, signal heterogeneity on T2-weighted and diffusion-weighted imaging, higher ADC values, and involvement of deep gray-matter nuclei favor fungal abscess more than a bacterial abscess.<sup>[4]</sup>

The authors have mentioned 8/30 children had seizures, but few more information about the type of seizures, antiepileptic drugs used, electroencephalographic abnormalities detected, and proportion which evolved into epilepsy would have benefited the readers. In the study by Kilpatrick, 12/35 patients with brain abscess had seizures.<sup>[5]</sup> Similarly, information regarding the proportion of children who required hypertonic saline/mannitol for emergent herniation/symptomatic rise in intracranial pressure, how many had papilledema in fundus evaluation, the number of children who did not respond to initial antibiotic regimen and antibiotic sensitivity pattern of *Proteus mirabilis* isolated from 2 patients. The information regarding the clinical outcome of children who had culture positivity was whether distinct from those without any definite positive culture would have benefited the article.

The authors have mainly focused on few risk factors like presence of middle ear infection/mastoiditis/cyanotic congenital heart disease but did not mention about the

presence of other risk factors like chronic paranasal sinusitis, orbital cellulitis, dental infection, history of penetrating head injury, primary or secondary immunodeficiency, presence of malignancy, or use of immunosuppressants. Although they have performed serum immunoglobulin levels of participants, they did not mention that in results. Lastly, the authors did mention the indications for surgical intervention, but they did not mention when they opted for burr hole aspiration and when proceeded for craniotomy and surgical excision. Currently, needle aspiration through the burr hole is considered the initial surgical intervention of choice for brain abscess in accessible areas and craniotomy followed by surgical excision for cases with fungal/multiloculated abscesses.<sup>[6]</sup>

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### Conflicts of interest

There are no conflicts of interest.

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### REFERENCES

1. Prasad R, Biswas J, Singh K, Mishra OP, Singh A. Clinical profile and outcome of brain abscess in children from a tertiary care hospital in Eastern Uttar Pradesh. *Ann Indian Acad Neurol* 2020;23:303-7.
2. Helweg-Larsen J, Astradsson A, Richhall H, Erdal J, Laursen A, Brennum J. Pyogenic brain abscess, a 15-year survey. *BMC Infect Dis* 2012;12:332.
3. Demir MK, Hakan T, Kilicoglu G, Ceran N, Berkman MZ, Erdem I, *et al.* Bacterial brain abscesses: Prognostic value of an imaging severity index. *Clin Radiol* 2007;62:564-72.
4. Mueller-Mang C, Castillo M, Mang TG, Cartes-Zumelzu F, Weber M, Thurnher MM. Fungal versus bacterial brain abscesses: Is diffusion-weighted MR imaging a useful tool in the differential diagnosis? *Neuroradiology* 2007;49:651-7.
5. Kilpatrick C. Epilepsy and brain abscess. *J Clin Neurosci Off J Neurosurg Soc Australas* 1997;4:26-8.
6. Alvis Miranda H, Castellar-Leones SM, Elzain MA, Moscote-Salazar LR. Brain abscess: Current management. *J Neurosci Rural Pract* 2013;4:S67-81.

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