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# Massive microbleeds in posterior circulation territory in an immunocompromised patient with sepsis

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IMAGES IN NEUROCRITICAL CARE

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Diffuse microbleeds in cerebral white matter have been reported in critically ill patients [1]. We present a case of extensive microbleeds in the bilateral cerebellum and pons accompanied by sepsis. A 16-year-old female patient complained of severe headache, dizziness, and drowsiness while being admitted for treatment of cellulitis of the left malleolus. She was diagnosed with juvenile rheumatoid arthritis and treated with immunomodulators (sulfasalazine 500 mg and prednisolone 7.5 mg) for 5 years. Three hours after the first complaint of headache and dizziness, she presented with right hemiparesis with stuporous mentality, eventually progressing to coma. Although brain computed tomography images did not show hemorrhage, T2*-weighted gradient echo magnetic resonance imaging revealed massive microbleeds confined mainly to the bilateral cerebellum and brainstem (Fig. 1). Despite intensive care, the patient died of sepsis and extensive brain edema.

Microbleeds in the brain are detected in conditions such as microangiopathy, Moyamoya disease, vasculitis, and posterior reversible encephalopathy syndrome [2]. Meanwhile, Thurnher et al. [3] reported diffuse microsusceptibility changes, including in the brainstem and cerebellum, in critically ill immunocompromised patients undergoing mechanical ventilation and oxygenation. In our case, the precise diagnostic evaluation of other diseases that can provoke massive microbleeds and brain edema was not possible due to the patient's critical condition. However, images presenting with normal angiography and the absence of antibodies associated with vasculitis could indicate a condition prone to microbleeds in the brainstem with secondary brain edema due to the critically ill state.

## ARTICLE INFORMATION

### Ethics statement

This study was reviewed and approved by the Institutional Review Board of Hanyang University Seoul Hospital (No. HY 2022-10-029). The need for informed consent was waived by the Board.

### Conflict of interest

No potential conflict of interest relevant to this article.

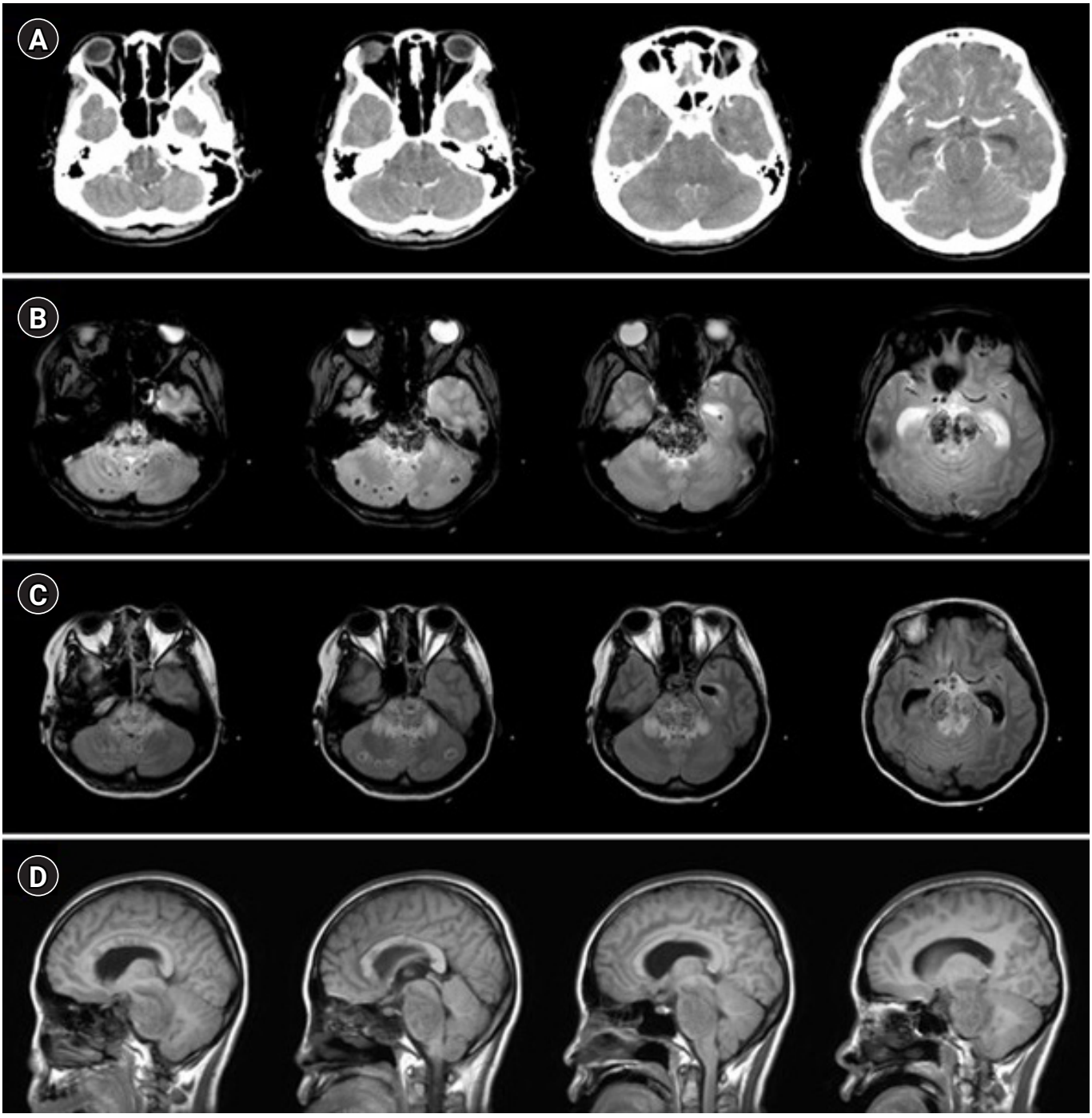


**Fig. 1.** Computed tomography (CT) and magnetic resonance imaging (MRI) scans of the brain. (A) CT images demonstrate edematous brainstem without overt hemorrhage. (B, C) T2*-weighted gradient echo MRI images present extensive small foci of hypointensity, compatible with microbleeds, diffusely dispersed throughout the brainstem and cerebellum. T2-weighted fluid-attenuated inversion recovery images reveal edematous change around lesions. (D) Sagittal T2-weighted images indicate swollen brainstem, resulting in hydrocephalus.

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## REFERENCES

1. Fanou EM, Coutinho JM, Shannon P, Kiehl TR, Levi MM, Wilcox ME, et al. Critical illness-associated cerebral microbleeds. Stroke 2017;48:1085-7.
2. Kargiotis O, Safouris A, Magoufis G, Papageorgiou E, Fili M, Psychogios K, et al. Cerebral microbleeds: incidence, imaging characteristics, common and uncommon causes. J Neurosonology Neuroimaging 2018;10:80-94.
3. Thurnher MM, Boban J, Röggla M, Staudinger T. Distinct pattern of microsusceptibility changes on brain magnetic resonance imaging (MRI) in critically ill patients on mechanical ventilation/oxygenation. Neuroradiology 2021;63:1651-8.


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