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IMAGES IN PAEDIATRICS

Fundoscopy or point-of-care ocular ultrasound?

¿Fundoscopia o ecografía ocular a pie de cama?

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We present the case of a boy aged 7 years admitted to the paediatric intensive care unit with a decreased level of consciousness and vomiting in the context of febrile illness. The magnetic resonance findings suggested cerebral venous sinus thrombosis, with no signs of increased intracranial pressure (IICP). The patient was treated with cefotaxime, methylprednisolone and anticoagulant drugs. A paediatric critical care specialist carried out a point-of-care transcranial Doppler ultrasound examination in which the appearance of the optic disc and nerve sheath (Fig. 1) were suggestive of IICP. Repeated ultrasound scans were performed to assess the response to treatment (Figs. 2 and 3).

In neurocritical patients, the sonographic assessment of the elevation of the optic disc is a simple and reliable technique that can be performed by physicians not specialised in ophthalmology. An elevation greater than 0.6 mm is a

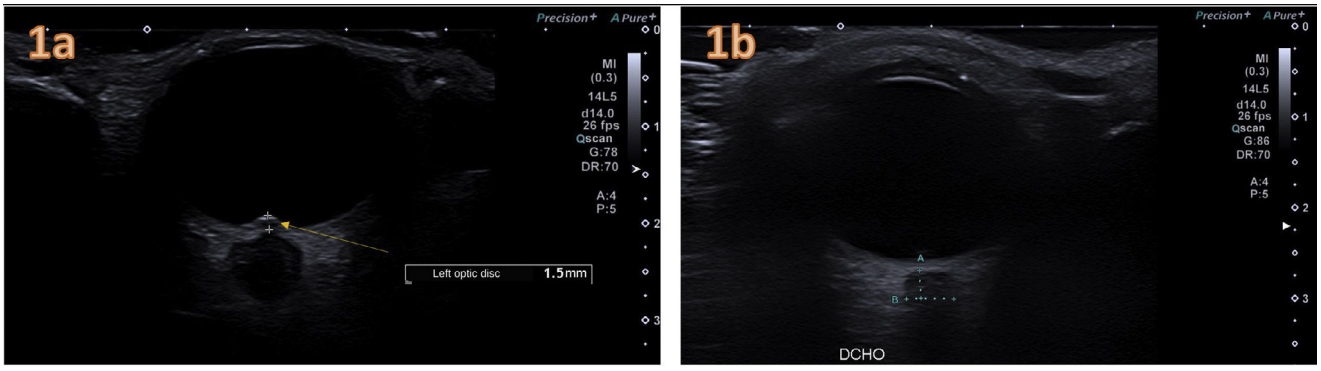

Figure 1 (a) Ocular ultrasound of the left optic disc on day 1 of the stay. The 1.5 mm elevation/protrusion of the optic disc exceeded the proposed 0.6 mm threshold for the suspicion of IICP and even the stricter threshold of 1 mm for confirmed IICP and the revised range for papilloedema (0.6–1.2 mm).[2] (b) Follow-up ultrasound scan at 5 days after initiation of treatment and clinical improvement, without visualization of optic disc protrusion.

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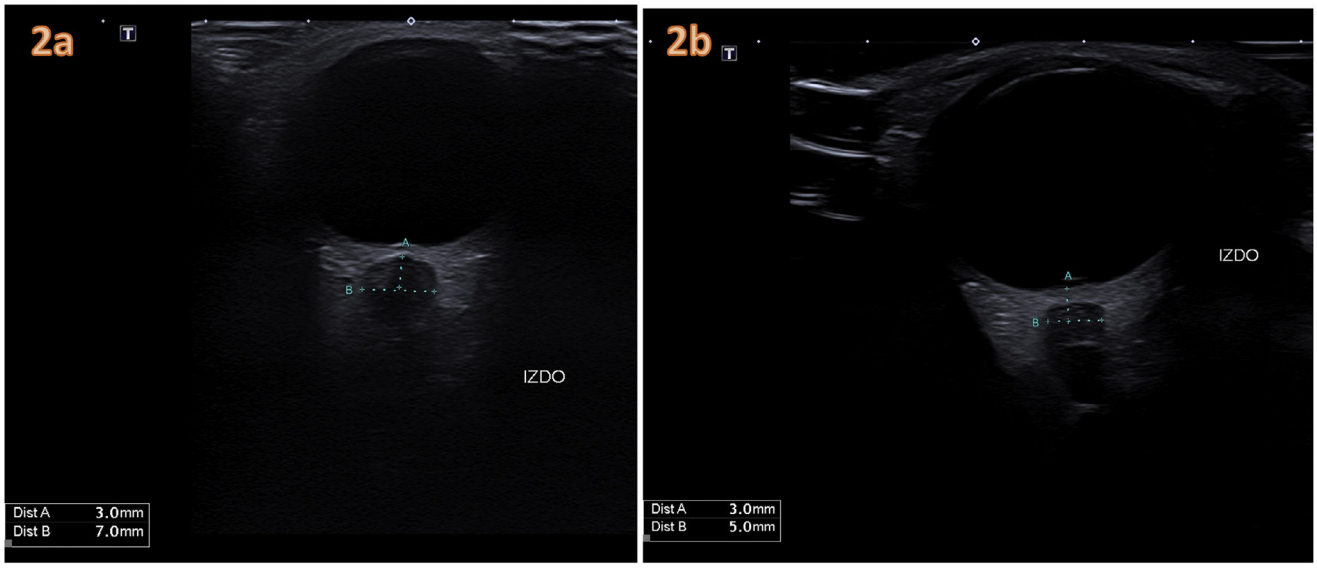

Figure 2 (a) Measurement of the diameter of the left optic nerve sheath (ONS) (7 mm) adjacent to the protruding optic disc. (b) Measurement at 5 days of treatment that evinced a decrease in the ONS diameter (5 mm) and the size of the optic disc.

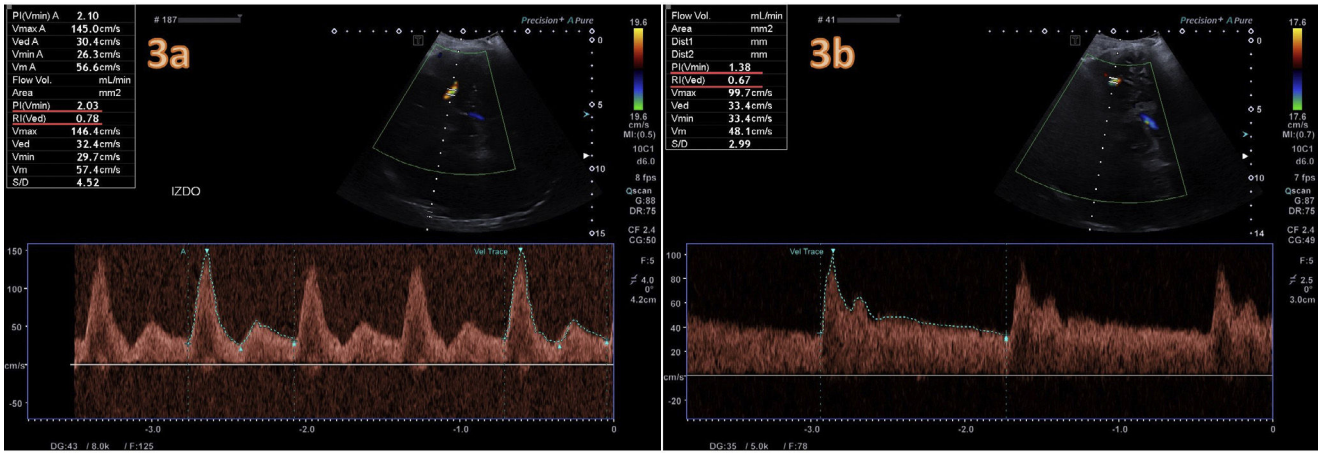

Figure 3 (a) Transcranial Doppler ultrasound of the flow of the left middle cerebral artery through the transtemporal window at diagnosis. Abnormal waveform at baseline, with a pulsatility index (PI) of 2.1 and a resistive index (RI) of 0.78, suggestive of IICP. (b) Measurement at 5 days of treatment with changes in the waveform and a decrease in both indices (PI, 1.38; RI, 0.67).

red flag for IICP,[1] as are the revised ranges established in a systematic review on papilloedema (0.6–1.2 mm).[2] This feature, in addition to the increased diameter of the optic nerve sheath and other findings of transcranial Doppler ultrasound, can be considered a simple and thorough tool for early assessment in patients with features suggestive of IICP when direct measurement of intracranial pressure and an eye fundus examination are not available.[3]

Cerebral venous sinus thrombosis can manifest with features suggestive of IICP, and point-of-care ultrasound can be used for its early diagnosis and subsequent monitoring.

Conflicts of interest

The authors have no conflicts of interest to declare.

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