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Multiple brain lesions in a young man with hypernatraemia

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DESCRIPTION

A 47-year-old patient with a history of chronic alcoholism was admitted to our hospital with sudden loss of consciousness, respiratory failure and severe hypernatraemia (173 mEq/l); he had no other alterations in routine laboratory analyses. During admittance he experienced mental status fluctuations and developed a spastic tetraparesis, a bilateral Babinski sign and a bilateral facial paresis (locked in status). Brain MRI (figure 1) showed symmetric lesions in the pons and thalami with areas of restricted diffusion and no significant mass effect. The pons lesion spared the external pontine fibres and had a trident shape. Clinical history together with MR images suggested an osmotic demyelination syndrome (ODS), specifically a case of central pontine and extrapontine myelinolysis. ODS is a rare condition caused by severe electrolyte imbalance.¹

It usually occurs during a rapid iatrogenic correction of hyponatraemia but has sometimes been described in a hypernatraemia context without sudden deviations of sodium concentration.² It puts the nerve cells, particularly oligodendrocytes, at risk of cellular dehydration and demyelination. Alcohol addicts and malnourished individuals are at higher risk of developing it because they usually have a deficiency in organic osmolytes.³ In this patient's case alcoholism probably acted as a predisposing factor.^{2,3} Myelinolysis predominantly affects the pons due to the intercrossing arrangement of oligodendrocytes, which limits the ability of these cells to increase their volume.³ Extrapontine myelinolysis occurs in 10% of the cases. The patient's hypernatraemia was slowly corrected but his condition has not improved; he is currently in a long-term care unit.

Figure 1 (A) Sagittal T1FSE; (B, C) Coronal and axial T2FSE; (D) Axial FLAIR; (E, F): anisotropic diffusion study (b1000 and ADC map, respectively). The images show a symmetric central pontine lesion (arrows), sparing the peripheral fibres, with a typical trident shape and areas of restricted diffusion. Also note, in images B and C, the symmetric thalamic lesions (open arrows).

Learning points

- ▶ OSD is a rare disorder that should be suspected in cases of unexplained neurologic deficits associated with electrolyte imbalance.
- ▶ MRI is useful in the diagnosis revealing characteristic, trident shape, pontine lesions.
- ▶ Alcoholism and malnutrition are important predisposing factors.

Competing interests None.

Patient consent Obtained.

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