The “Mexican Hat” Sign in Osmotic Demyelination Syndrome

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A 56 year old male was admitted in a local hospital for pain abdomen and repeated vomiting 15 days back. He was evaluated and found to have severe hyponatremia with serum sodium level of 94 mmol/l. He was treated with 3% hypertonic saline, following which his serum sodium was raised to 108 mol/l after 24 hour and to 119 mmol/l after 48 hour. Three days later, he developed sudden onset slurring of speech, weakness of both upper and lower limbs with altered sensorium. He was then referred to our hospital with deteriorating neurological function. In our hospital, patient was stuporous. There was generalised rigidity with quadriplegia and bilateral flexor plantar response. There was rest tremor of both upper limbs with tremor of lip. Routine investigations including complete blood count, renal and liver function tests were normal. MRI study demonstrated T1 hypointense, T2 hyperintense and fluid-attenuated inversion recovery (FLAIR) hyperintense Mexican hat shaped signal within the central pons with restricted diffusion in diffusion weighted image (DWI) (Figure 1). MRI study also showed T1 hypointense, T2 and FLAIR hyperintense signal in bilateral basal ganglia (Figure 2). Clinical and radiological findings were compatible with central pontine myelinolysis (CPM) and extrapontine myelinolysis (EPM). The patient was given supportive treatment. 20 days after admission, patient was discharged with improvement in neurological status and able to walk with support.

Osmotic demyelination syndrome (ODS) is an acute demyelinating process commonly involving the central portion of basis pontis. CPM was first described in 1959 by Adams et al. as a symmetric, demyelinating focus most prominent in the central pons.¹ Rapid correction of chronic hyponatremia is the most common cause for development of CPM.² The ‘Mexican Hat’ sign in MRI is the classical picture seen in CPM and it may serve as early diagnostic feature of this clinical entity.

References