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Clinical Image

Hyperosmolar Hyperglycemia Associated With Central Pontine Myelinolysis, Seizure, and Cerebral Venous Thrombosis

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A 55 year-old right-handed man developed left-gaze deviation and a generalized tonic-clonic seizure. Labs demonstrated glucose of 678mg/dL, sodium of 130mg/dL, and a serum osmolality of 300mg/dL. There was no evidence of alcohol intoxication. Brain MRI demonstrated central pontine and middle cerebral peduncle restriction on diffusion-weighted imaging consistent with central pontine myelinolysis [A,B]. Seven days after event, sagittal (→) and left transverse sinus thrombosis (*) were suspected on MRI-FLAIR [C] and confirmed with MR Venogram [D] (Figure 1). The patient was anticoagulated and discharged without neurological deficit ten days after event.

This patient serves as a reminder of neurological consequences and treatment implications of hyperosmotic states. Hyperosmolar hyperglycemia and electrolyte imbalance can cause osmotic demyelination even in the absence of alcohol intoxication. Impaired venous drainage may in part account for extra-pontine demyelination [1,2]. Hyperosmotic hyperglycemia has also been associated with seizures, focal neurological deficits, and cerebral venous thrombosis [3-5].

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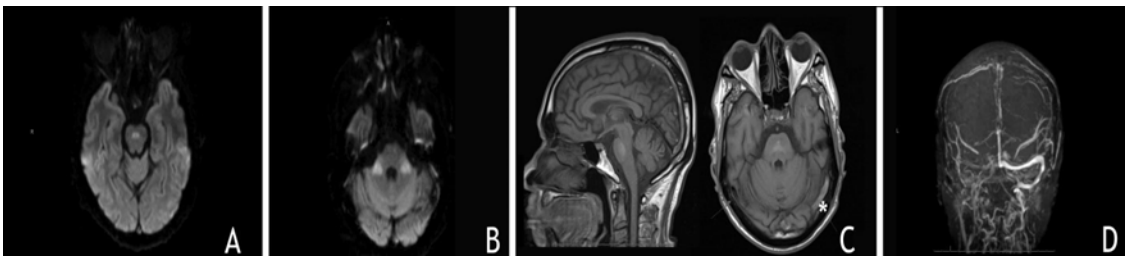

Figure 1: Brain MRI of central pontine and middle cerebral peduncle restriction.

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