

Clinical Image

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

Nirav H Shah*, **Tatjana Rundek**, and **Ralph Sacco**
Department of Neurology, University of Miami, USA

***Corresponding author:** Nirav H. Shah, Department of Neurology, Miller School of Medicine, University of Miami, 1120 NW 14th Street, CRB 1365, Miami, FL 33136, USA, Tel: 305-243-2344; Fax: 305-243-7081; Email: thenshah@gmail.com

Received: March 21, 2015; **Accepted:** April 08, 2015;

Published: April 11, 2015

Clinical Image

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].

References

1. Adams RD, Victor M, Mancall EL. Central pontine myelinolysis: a hitherto undescribed disease occurring in alcoholic and malnourished patients. *AMA Arch. Neurol. Psychiatry.* 1959; 81: 154–172.
2. Landers JW, Chason JL, Samuel VN. Central pontine myelinolysis. A pathogenetics hypothesis. *Neurology.* 1965; 15: 968–971.
3. Harden CL, Rosenbaum DH, Daras M. Hyperglycemia presenting with occipital seizures. *Epilepsia.* 1991; 32: 215–220.
4. Shah NH, Velez V, Casanova T, Koch S. Hyperglycemia presenting as left middle cerebral artery stroke: a case report. *J Vasc Interv. Neurol.* 2014; 7: 9–12.
5. Ferro JM, Canhão P, Stam J, Bousser M-G, Barinagarrementeria F, ISCVT Investigators. Prognosis of cerebral vein and dural sinus thrombosis: results of the International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT). *Stroke J Cereb. Circ.* 2004; 35: 664–670.

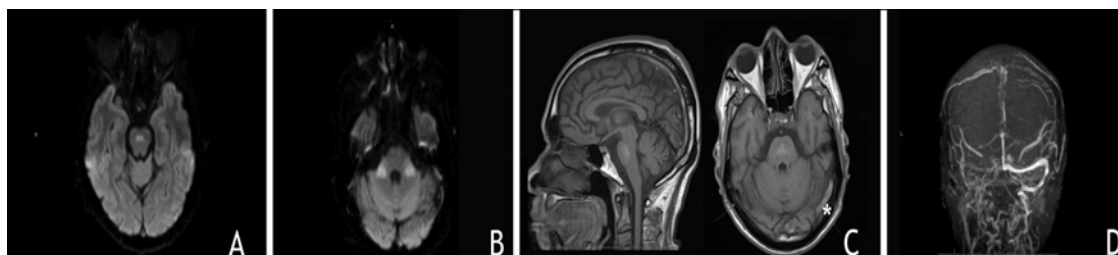


Figure 1: Brain MRI of central pontine and middle cerebral peduncle restriction.