

Introduction

Central pontine myelinolysis (CPM) is a disorder of the cerebral white matter that most commonly affects alcoholics with severe electrolyte disorders. The most common cause of CPM is rapid correction of critical hyponatremia. Clinical presentation usually includes but not limited to dysphagia, dysarthria and variable degrees of quadriparesis. Severe form can present as locked in syndrome (LIS) with quadriplegia, bulbar palsy and generalized sensory loss. Interestingly, symptoms start to appear after 1 to 10 days of sodium correction. Magnetic Resonance Imaging (MRI) is the diagnostic imaging of choice. Treatment is mostly supportive and the main goal is prevention. Retrospective studies have shown that desmopressin has been safe and effective in preventing and reversing the overcorrection of hyponatremia. Here we present a case of CPM resulting from critical hyponatremia rapid correction.

Discussion

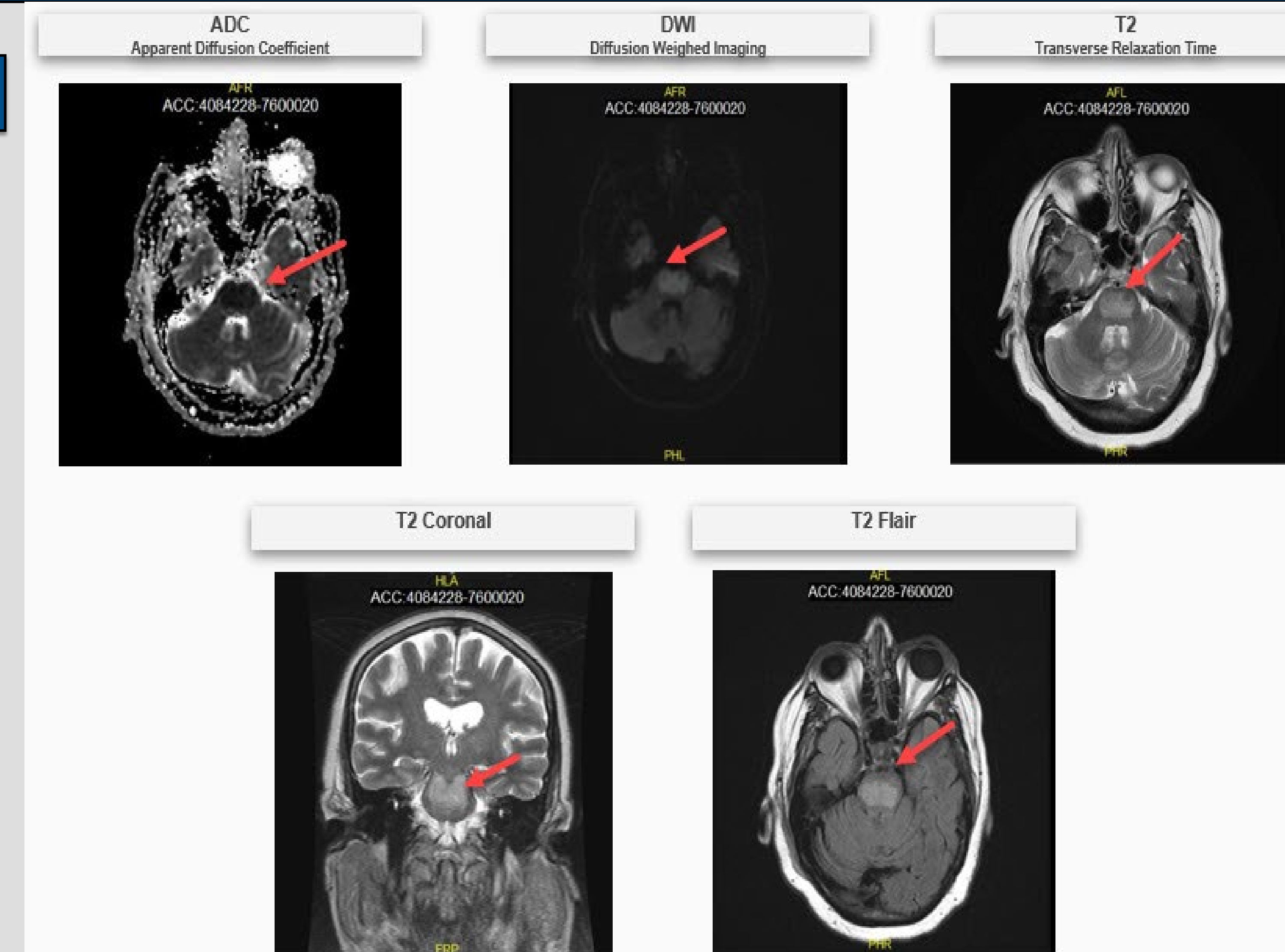
Sodium correction of more than 6-8mmol/l in 24 hours in patients with critical hyponatremia can cause intense osmotic stress to the brain cells which leads to demyelination in the pons. Our patient's sodium correction was 11mmol/l in first 24 hours. Sodium correction of 8 to 12mmol/l in 24 hours is recommended in mild to moderate hyponatremia but in patients with severe hyponatremia of less than 120mmol/l, most studies recommend to not correct it more than 6 to 8mmol/l. Plasmapheresis can be started early in place of IVIGs as it has shown significant improvement in some studies but available literature is limited. Patients have variable gradual recovery from weeks to months after appropriate diagnosis and management.

Case Presentation

Our patient is a 63 year old female with history of alcoholism who was admitted to ICU with encephalopathy and serum sodium of 107mmol/l. Normal saline at 60cc/h was started which corrected sodium to 118mmol/l in first 24 hours. In the next 24 hours, sodium was further corrected to 125mmol/l and patient's encephalopathy resolved. Brain imaging was unremarkable during that admission. Patient was discharged with a sodium level of 134mmol/l after three days. She was re-admitted after one week for a fall with normal sodium levels. Ten days from the initial sodium correction, she developed rapid neurological decline within 24 hours during the re-admission. Symptoms included aphasia, respiratory distress and quadriplegia. She required intubation and transfer to the ICU. Stat MRI brain revealed concern for ischemic pontine stroke but was then determined to be CM by neurology. She was started on a five day course of IVIG and Methylprednisolone. Within a week, she was able to respond to questions with eyes blinking. She eventually got tracheostomy and PEG. Ten days after IVIGs course, six sessions of plasmapheresis were started after which she was able to move her head, make facial expressions and withdraws to noxious stimuli in all four extremities. Patient was discharged to rehab afterwards.

References

1. Kalampokini S, Artemiadis A, Zis P, et al. Osmotic demyelination syndrome improving after immune-modulating treatment: Case report and literature review. Clin Neurol Neurosurg. 2021;208:106811. doi:10.1016/j.clineuro.2021.106811
2. Brunner JE, Redmond JM, Haggard AM, Elias SB. Central pontine myelinolysis after rapid correction of hyponatremia: a magnetic resonance imaging study. Ann Neurol. 1988;23(4):389-391. doi:10.1002/ana.410230413
3. Siddiqui FS, Javed Z, Mahmood U, Saeed I, Qasim YF, Saeed MSB. Normal Correction of Sodium Leading to Central Pontine Demyelination: A Rare Occurrence. Cureus. 2018 Sep 4;10(9):e3252. doi:10.7759/cureus.3252. PMID: 30416903; PMCID: PMC6217865.



Conclusion

In patients with critical hyponatremia, it's important to avoid sodium correction more than 6 to 8 mmol/l in 24 hours to avoid the CPM risk. More research is required to determine the appropriate course of management whether to start with IVIGs or plasmapheresis as current data is limited.