Intraparenchymal hemorrhage in posterior reversible encephalopathy syndrome in a liver transplant patient

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Clinical Vignette

- A 46-year-old Caucasian man presented with new-onset generalized tonic-clonic seizure. He had a history of hypertension, type-II diabetes mellitus, alcohol abuse and cirrhosis with orthotopic liver transplant six weeks prior to presentation. He was maintained on tacrolimus and mycophenolate.
- Upon arrival, he was afebrile with a systolic blood pressure 180-200 mm Hg. He was lethargic and dysarthric. No focal deficits were identified. Initial non-contrasted CT head was unremarkable. Labs revealed lactic acidosis, an elevated alcohol level, and hyperammonemia.
- He was given lactulose for hepatic encephalopathy. Repeat labs demonstrated resolution of lactic acidosis and hyperammonemia. CSF analysis was unremarkable. EEG identified irregular diffuse intermixed delta-theta activity. His lethargy persisted and he developed intermittent agitation. Repeat CT head revealed interval development of two hyperdensities with surrounding vasogenic edema in the left cerebellar and frontal lobes. MRI revealed two foci of intraparenchymal hemorrhage (Figure 1) superimposed on multifocal regions of T2/FLAIR hyperintensities bilaterally, predominantly in the posterior circulation, but also with significant involvement of the left frontal lobe (Figure 2). Subsequently, patient entered non-convulsive status epilepticus and was started on antiepileptics. His blood pressure was tightly controlled and tacrolimus was discontinued. Within the next week, the patient clinically improved, corresponding with an interval decrease in the abnormal T2 hyperintensities on repeat MRI.

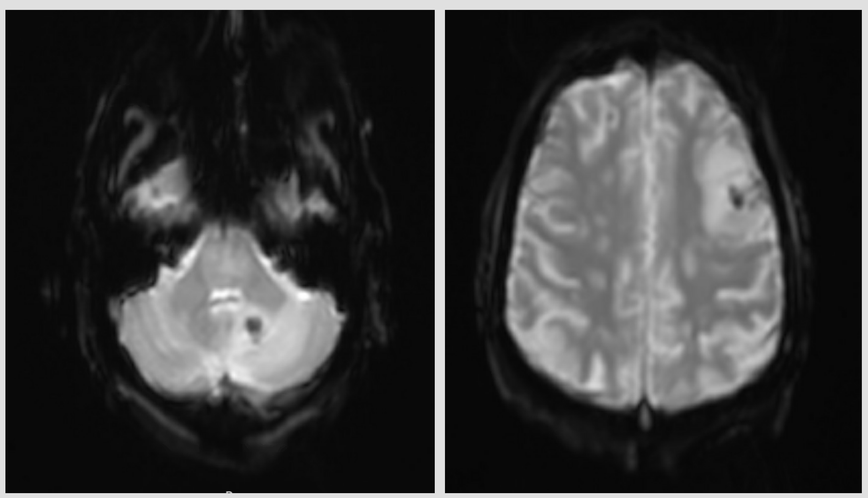

Figure 1. Gradient echo (GRE) sequence showing two foci of intraparenchymal hemorrhage within the areas of vasogenic edema

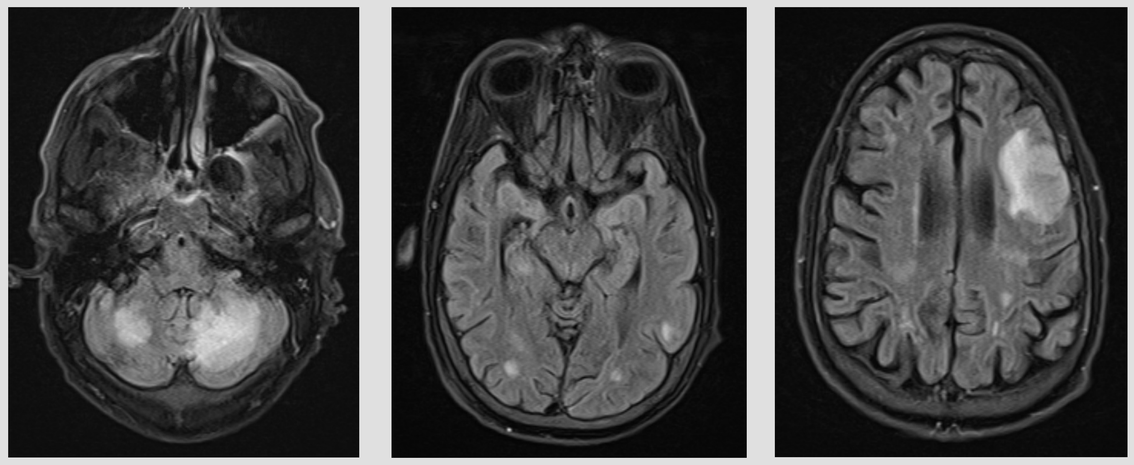

Figure 2. Fluid-attenuated inversion recovery (FLAIR) sequence showing multifocal foci of vasogenic edema

Discussion

This case presented a diagnostic challenge with unusual findings of posterior reversible encephalopathy syndrome (PRES). The differential for these findings in an immunocompromised patient also includes infection, malignancy, reversible cerebral vasoconstriction syndrome (RCVS), hepatic encephalopathy, hypertensive encephalopathy, and Wernicke's encephalopathy. Suspending tacrolimus administration and close control of his blood pressure led to clinical and radiographic improvement, findings consistent with a diagnosis of PRES. RCVS was considered; however, this diagnosis is less likely given improvement following blood pressure control and lack of thunderclap headaches reported. This case demonstrates unusual findings of PRES, including involvement of the anterior circulation and intraparenchymal hemorrhage.

Hinchey et al first described PRES in a case series of 15 patients with either hypertensive encephalopathy, eclampsia, or immunosuppressive treatment[1]. In 2009, Hefzy et al reported a retrospective assessment of 151 patients diagnosed with PRES, of which 23 were identified as having intracranial hemorrhage[2].

References

1. Hinchey J, Chaves C, Appignani B, et al. A reversible posterior leukoencephalopathy syndrome. N Engl J Med. Feb 22 1996;334(8):494-500.

2. Hefzy HM, Bartynski WS, Boardman JF, Lacomis D. Hemorrhage in posterior reversible encephalopathy syndrome: imaging and clinical features. AJNR Am J Neuroradiol. Aug 2009;30(7):1371-1379.