

White Cerebellum Sign

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Abstract

The white cerebellum sign is an unusual but striking radiological sign of global hypoxia ischemia of the brain. Recognition helps in diagnosis and prognosis as this sign is usually associated with a uniformly poor outcome.

Key words: white cerebellum sign; hypoxic ischemic brain injury

The Case

A one-year-old boy presented to the emergency with altered sensorium, persistent decerebrate posturing and respiratory failure. The child had presented with diabetic ketoacidosis a week ago in a private hospital and had developed altered sensorium on the night before re-admission. Over the next twelve hours, the child had multiple episodes of generalized tonic seizures and admission blood sugar was 21 mg/dl. After initial stabilization with intravenous 10% dextrose bolus, intravenous fluids and intubation, ventilation an urgent CT Scan Head revealed diffuse reduction in the density of the supratentorial brain parenchyma with loss of normal grey-white matter interface. This was associated with comparatively increased density of brain stem and bilateral cerebellar hemispheres and was consistent with “White Cerebellum sign”(Fig 1). Despite mechanical ventilation, anti-cerebral edema measures and supportive care, the child succumbed after 36 hours of admission.

The “White Cerebellum Sign” is an unusual but striking radiological sign of severe hypoxic ischemic brain injury associated with birth asphyxia, head injury, drowning, status epilepticus and meningoencephalitis^{1,2}. It is postulated to be due to diffuse cerebral edema leading to loss of normal grey-white matter differentiation of the cerebral parenchyma³. The cortex and basal ganglia with a higher metabolic activity are vulnerable to tissue hypoxia and hypo perfusion. Other theories report a preferential flow to the posterior circulation due to the primitive “diving reflex” along with distension of the deep medullary veins as the cause⁴. The “Reversal Sign” on the other hand signifies reversal of grey matter and white matter densities of the cerebral hemispheres along with increased density of thalamus, brainstem and cerebellum. Both these signs carry a grim prognosis and are a marker for irreversible brain injury^{5,6}.

Recognition of this striking sign on neuro-imaging can help in diagnosis and counselling of the family considering the poor long term outcome.



Fig 1: CT Scan of the head showing diffuse reduction in the density of the supratentorial brain parenchyma with loss of normal grey-white matter interface with comparatively increased density of brain stem and bilateral cerebellar hemispheres consistent with “White Cerebellum sign”

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