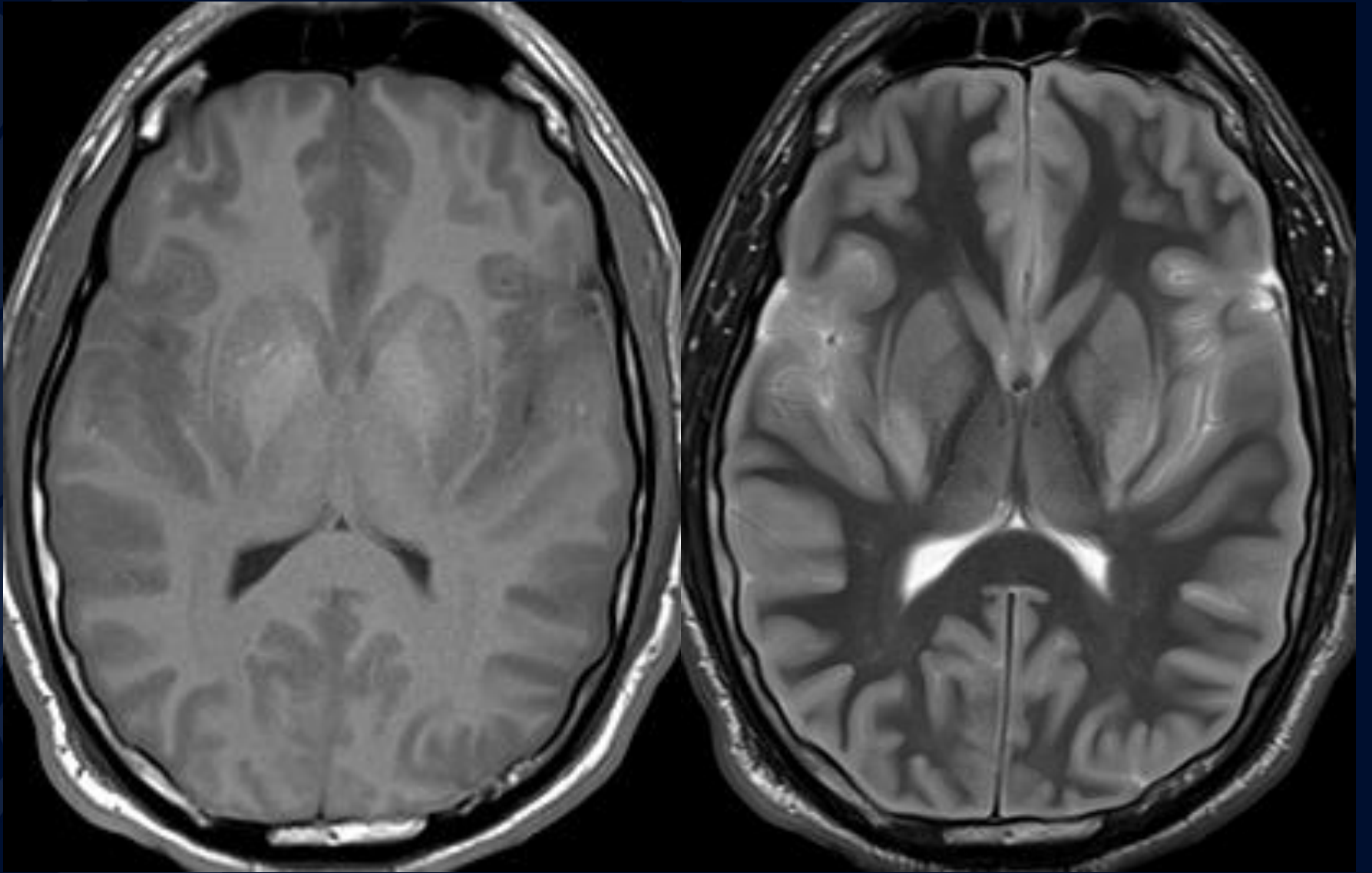


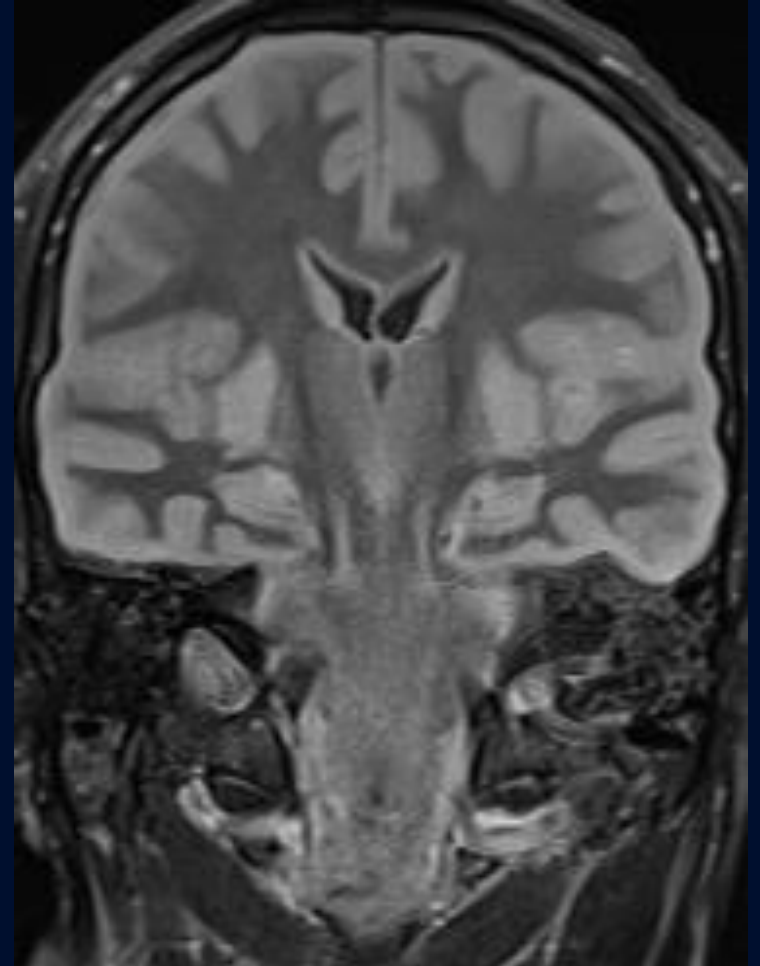
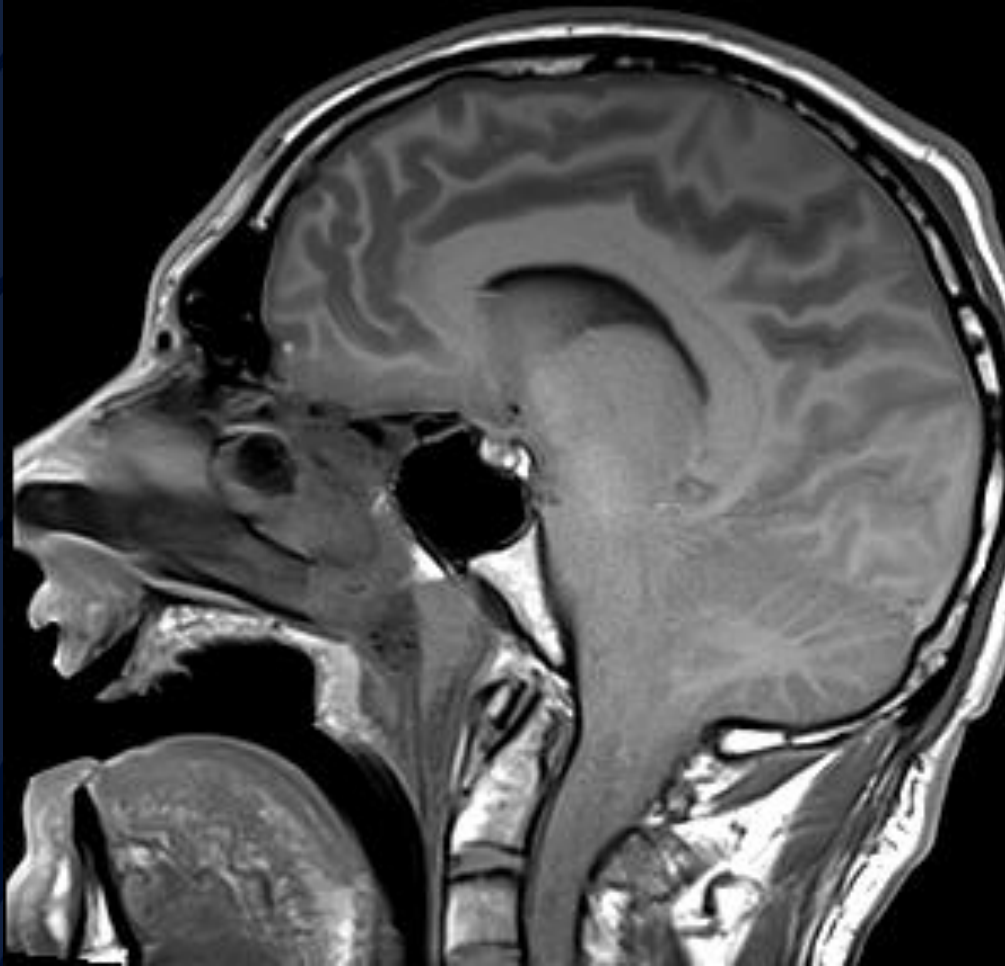
Unresponsive

John A Cieslak III, MD, PhD

Leo Wolansky, MD









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A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide, partially overlapping the title text.

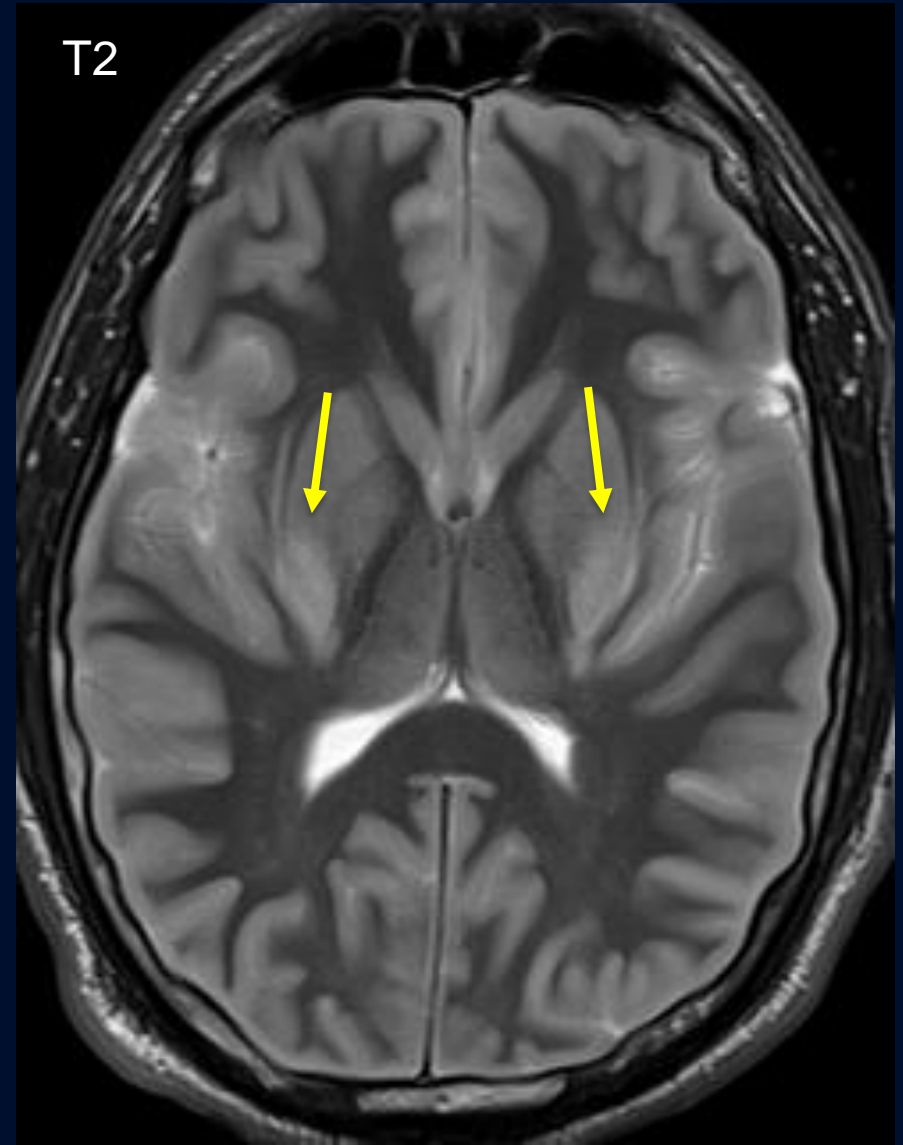
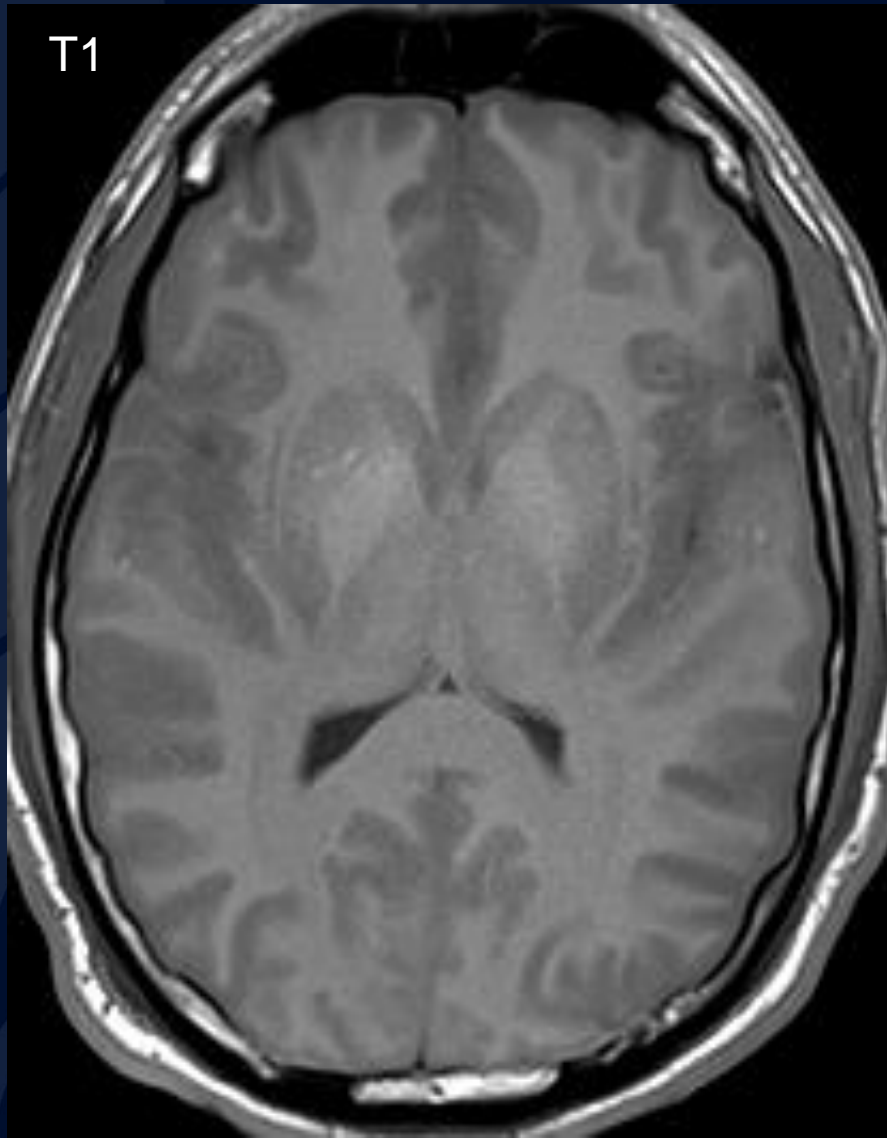
Hanging-induced Hypoxic-Ischemic Encephalopathy



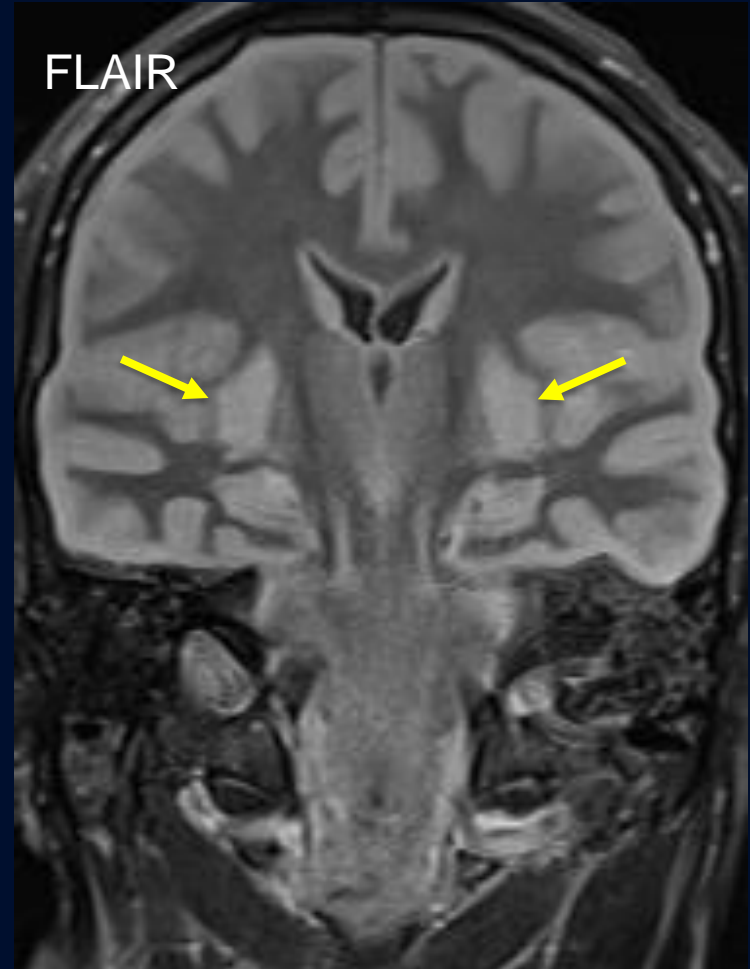
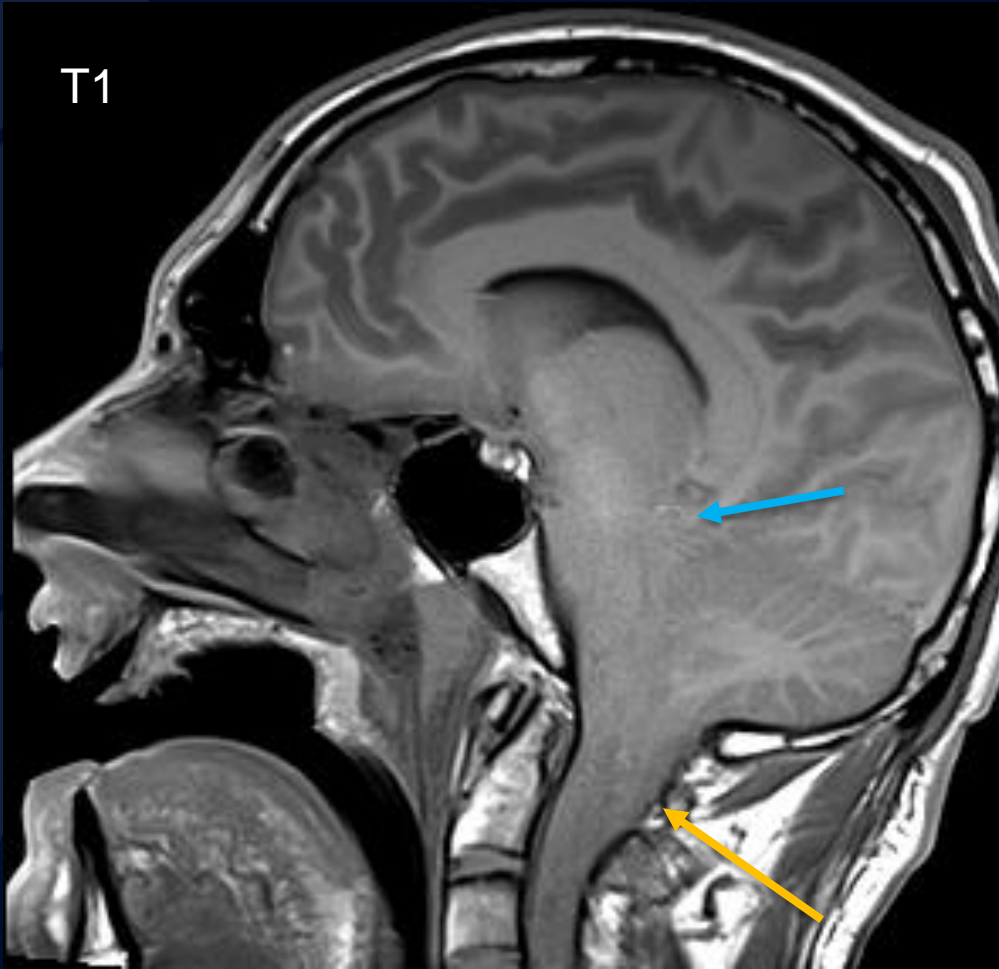
CT brain without
contrast, axial

Diffuse edema with
effacement of the
cerebral sulci

Blurring of gray-white
matter differentiation



Symmetric T2 hyperintensity in the bilateral lentiform nuclei



Symmetric abnormal FLAIR signal in the bilateral putamen (right image, yellow arrows)
Cisternal obliteration (blue arrow) & cerebellar tonsillar herniation into the foramen magnum (left image, orange arrow).

Hypoxic-Ischemic Encephalopathy

- Also known as hypoxic-ischemic brain injury or global hypoxic-ischemic injury.
- In children, most commonly seen after asphyxiation or drowning.
- In adults, most commonly seen secondary to cardiac arrest or cerebrovascular disease.

Hypoxic-Ischemic Encephalopathy

- Affects the gray matter structures first, which are more susceptible to hypoxia due to higher metabolic oxygen and glucose demands:
 - Basal ganglia
 - Thalami
 - Cerebral cortex
 - Cerebellum
 - Hippocampi

Hypoxic-Ischemic Encephalopathy

CT Findings:

- Diffuse edema with effacement of the CSF containing spaces.
- Loss of normal gray-white matter differentiation
- Reversal Sign: reversal of the normal CT attenuation for gray and white matter

Hypoxic-Ischemic Encephalopathy

MRI Findings:

- Diffusion-weighted imaging is the earliest imaging modality to become positive, with signal possible in the cerebral cortex, cerebellar hemispheres, basal ganglia, thalami & brainstem.
- T1 images may be normal or show subtle abnormalities.
- Within the early subacute period (24hr – 2 wks), T2-weighted images typically become positive & demonstrate increased signal intensity (swelling) in the injured gray matter structures.

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4. Huang BY, Castillo M. Hypoxic-Ischemic Brain Injury: Imaging Findings from Birth to Adulthood. *Radiographics*. 2008; 28: 417-439.
5. Rutherford M, Penncock J, Cowan F, et-al. Hypoxic-Ischaemic Encephalopathy: Early and Late Magnetic Resonance Imaging Findings in Relation to Outcome. *Archives of Disease in Childhood Fetal and Neonatal edition*. 1996; 75(3): 145-151.