Unresponsive

John A Cieslak III, MD, PhD
Leo Wolansky, MD
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.
References:

1. Radiopedia


