

Neuroimaging in Paediatric Abusive Head Trauma: A Pictorial Review

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Introduction

Abusive head trauma is one of the leading causes of mortality in young children. It is crucial to recognize the imaging characteristics as a delay in diagnosis could lead to life-threatening consequences. This poster illustrates the features which should not be overlooked on neuroimaging.

Subdural haematoma (SDH)

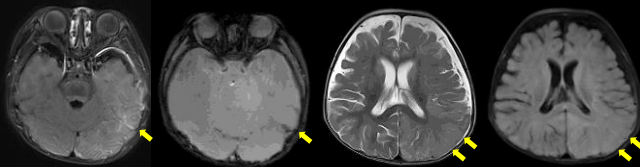
- Bilateral, multiple
- Cerebral convexity, parafalcine, posterior fossa
- Blood of varying ages



Bilateral frontoparietal SDH of mixed densities on CT and varying signal intensities on corresponding T1 and T2 MRI.

Subarachnoid haemorrhage (SAH)

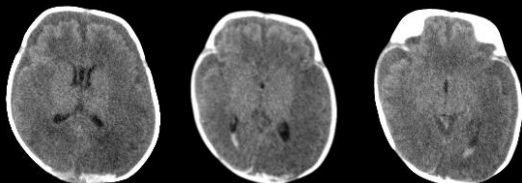
- Never an isolated finding; associated with SDH, DAI
- Adjacent to skull fracture / local traumatic lesions



Left parieto-occipital SAH seen as T2 FLAIR hyperintense signal in the sulcal spaces with susceptibility artefacts on SWI and underlying **cerebral oedema**. Associated SDH at left temporal region and posterior fossa.

Cerebrovascular accident

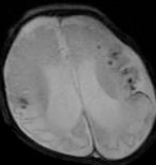
- Bilateral, multifocal stroke +/- overlying SDH



Bilateral parieto-occipital hypodensities with loss of grey-white differentiation, representing ischemic stroke. Associated SDH of varying ages with **intraventricular haemorrhage**.

Cortical contusion

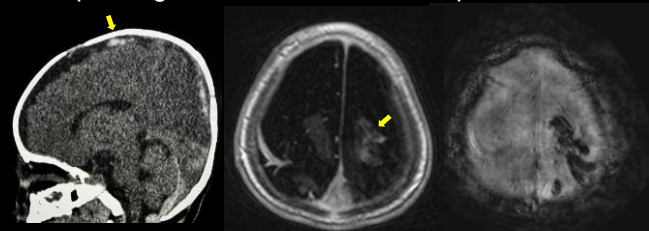
- Frontal / temporal lobes, close to skull base / fracture
- Foci of parenchymal haemorrhage in the cortex and subcortical white matter with adjacent oedema



Multiple haemorrhagic foci in bilateral fronto-parietal cortical and subcortical white matter shown as susceptibility artefacts on SWI.

Bridging vein (BV) thrombosis

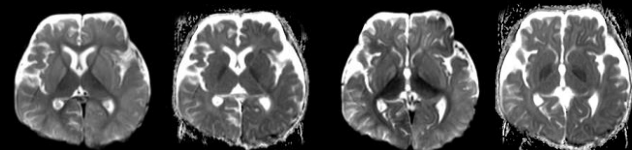
- Parasagittal, along frontal / parietal convexities
- Tadpole sign: Torn BV with oval-shaped clot



Dilated hyperdense thrombosed BV on CT, seen as filling defect on post-contrast T1 MRI with blooming artefacts on SWI. Associated left parietal and posterior fossa SDH.

Hypoxic-ischemic injury

- Diffuse, supratentorial, cortico-subcortical parenchymal, watershed infarction



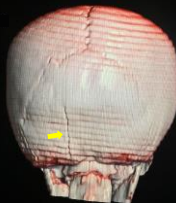
Restricted diffusion in bilateral basal ganglia on DWI/ADC suggesting early parenchymal injury.

Diffuse axonal injury (DAI)

- Microhaemorrhages at grey-white matter junction, corpus callosum, internal capsule, brainstem, best seen as susceptibility artefacts on T2* GRE / SWI

Skull fracture

- Multiple, complex, depressed fractures
- Cross suture, sutural diastasis
- More specific: non-parietal fracture



3D reformat CT: Linear occipital bone fracture.

Retinal haemorrhage

- Foci of susceptibility artefacts along posterior aspect of the globe on T2* GRE / SWI



T2* MRI: Focus of susceptibility artefact at posterior right globe representing retinal hemorrhage.