Subfalcine herniation

The cingulate gyrus herniates under the falx (AKA subfalcine herniation). Usually asymptomatic unless anterior cerebral artery (ACA) kinks and occludes causing bifrontal infarction. Usually warns of impending transtentorial herniation.

Subfalcine brain herniation is well documented in the presence of raised intracranial pressure.

The subfalcine herniation occurs when one hemisphere swells and shifts the cingulate gyrus beneath the falx cerebri, consequently causing injury of the cingulate gyrus 1).

Radiographic features

CT

The easiest method of evaluating for subfalcine shift is a straight line drawn in the expected location of the septum pellucidum from the posterior most aspects to the falx on axial images. Shift of the septum pellucidum from this midline can be measured in millimeters and compared over time to determine any change.

Asymmetry at the anterior falx with a widened CSF spaces on the contralateral anterior falx. There may be ipsilateral lateral ventricle compression with contralateral lateral ventricular dilation.

MRI

Findings are best visualized on coronal MR imaging. Unilateral mass effect from pathology in the frontal, parietal or temporal region, such as intracranial haemorrhage or tumour, causes displacement of the brain away from the mass.

Complications

contralateral hydrocephalus due to obstruction of the foramen of Monro anterior cerebral artery (ACA) territory infarct due to compression of ACA branches ACA infarction occurs as the cingulate sulcus extends under the falx dragging the ipsilateral anterior cerebral artery with it. If this becomes compressed against the falx occlusion can lead to a distal anterior cerebral artery infarction and thus the clinical symptom of contralateral leg weakness.
Case reports

Shah et al. report a case of herniation occurring after decompression of bilateral chronic subdural haematomas, which did not appear to be related to high pressure. They suggest that after rapid decompression of a collection, the unsupported brain can herniate under the falx with serious consequences: ‘brain-slump’

Recovery of the corticospinal tracts injured by subfalcine herniation: a diffusion tensor tractography study.

