

Bilateral “Swirl Sign”: A predictor of rebleed

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Clinical Description

A 48-year-old man presented in an outside hospital with sudden onset right sided weakness of 2 h duration. He was recently detected hypertensive but on irregular medication. At presentation, patient was drowsy with blood pressure (BP) of 220/118 mm of Hg. Noncontrast computed tomography (NCCT) head showed bilateral basal ganglia bleed (left more than the right). Over 2 days, he had mild improvement in sensorium, followed by worsening of symptoms. The patient was referred to our institute in an E1VTM1 status. Repeat NCCT showed expansion of hematoma involving thalamus on the right side which then became larger compared to left side. The patient was put on ventilator support, and intensive BP control (target systolic BP of 140 mm of Hg using injection labetalol) was done. His coagulogram and platelet count were within normal range. Patient succumbed to his illness on the 2nd day of admission. Evaluation of imaging revealed swirl signs on both sides (hypodense lesion within hemorrhage, Figure 1a and b). The hematomas expanded (right 40.36 cm³; left 25.01 cm³, Figure 1b and c) leading to worsening of GCS and later succumbed. “Swirl sign” a predictor of rebleed is not very uncommon although bilateral swirl sign is rare.

Discussion

“Swirl sign” is an NCCT finding representing an area of low attenuation compared to hyperattenuating clotted blood. It has been described commonly in patients after head injury having large extra-axial collection like subdural or epidural

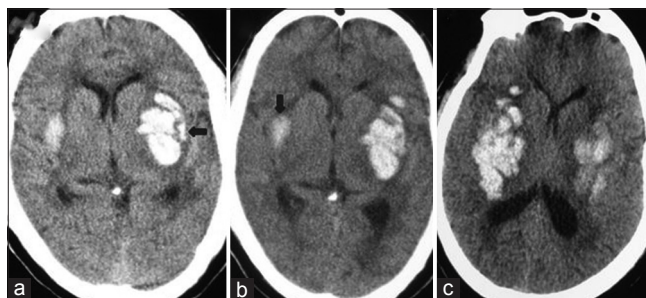


Figure 1: Noncontrast computer tomography showing bilateral basal ganglia hemorrhages. Noncontrast computer tomography of brain showing bilateral basal ganglia hemorrhage (a-c). Bilateral swirl sign (hypodense area surrounded by hyperdense clotted hematoma; a and b) with follow-up image showing expansion of hematoma (b and c)

hematoma. The hypoattenuation is due to fresh unclotted blood; surrounded by hyperattenuating clotted blood.^[1] Swirl sign has two components, an active and a chronic one. Active component, which is isoattenuating to the brain, represents actively extravasating unclotted fresh blood. The chronic component is due to high attenuating clotted blood typically measures 50–70 HU.^[1,2] The protein content of clotted blood causes hyperattenuation. Iron and protoporphyrin contributes negligible to the degree of attenuation.^[1,3] Swirl sign is corollary of the spot sign caused by contrast extravasation on CT angiography representing the same phenomenon.^[4]

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"Swirl sign" or angiographic "spot sign" represents hematoma expansion in acute cerebral hemorrhage.^[4] Patients with swirl sign exhibit large hematoma and predicts poor prognosis with intracerebral hemorrhage.^[5] Hypertension related intracerebral hemorrhage is common, but bilateral cerebral hemorrhage due to hypertension is rare. Bilateral swirl sign predicting rebleed carries poor prognosis.

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Conflicts of interest

There are no conflicts of interest.

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