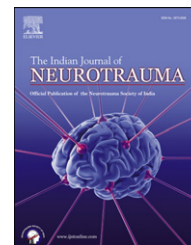


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## Case Report

# Superior cerebellar artery infarct in a case of multiple territory infarct following severe brain injury – A rare occurrence

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### ARTICLE INFO

#### Article history:

Received 22 October 2012

Accepted 5 November 2012

Available online 10 November 2012

#### Keywords:

Head injury

Superior cerebellar artery

Infraction

### ABSTRACT

Post-traumatic cerebral infarct is a recognized complication of head trauma. Majority of the infarcts are in the posterior cerebral artery (PCA) or anterior cerebral artery (ACA) territory due to transtentorial or subfalcine herniation respectively. SCA infarct following head injury has not been reported in literature. We describe a patient with severe head injury, who had multiple infarcts postoperatively, including a SCA territory infarct.

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Posterior fossa infarcts following trauma is rare. Superior cerebellar artery (SCA) infarct following head injury has not been reported previously in literature. We describe a patient with severe head injury following road traffic accident, who developed SCA territory infarct postoperatively.

## 1. Case report

A 28-year-old male was allegedly hit by a four-wheeler. At presentation, he was deeply comatose, with GCS of E1M2V1. He had dilated and sluggish reacting pupils, with intact brainstem reflexes. Cranial computerized tomography (CT) scan of the head (2 h) revealed right-sided-fronto-temporo-parietal acute subdural hematoma (SDH) with thickness of 15 mm, causing a midline shift of 17 mm (Fig. 1A, B). He underwent right fronto-temporo-parietal decompressive

hemicraniectomy, with evacuation of acute subdural hematoma with duraplasty. The patient was ventilated in ICU with anti-edema measures. Postoperative CT scan showed bilateral posterior cerebral artery territory and right middle cerebral artery territory infarct with well-defined hypodensity in the superior part of the left cerebellar hemisphere, suggestive of left SCA infarct (Fig. 2). Despite all aggressive measures, succumbed on third postoperative day. Autopsy revealed bilateral asymmetric tonsillar (left > right) transtentorial herniation, and hippocampal uncus herniation (Fig. 3A) along with bilateral PCA, right MCA and left SCA infarct (Fig. 3B, C).

## 2. Discussion

Post-traumatic cerebral infarctions (PTCI) occur in 8–10% of all severe traumatic brain injuries. Common vascular

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<http://dx.doi.org/10.1016/j.ijnt.2012.11.002>

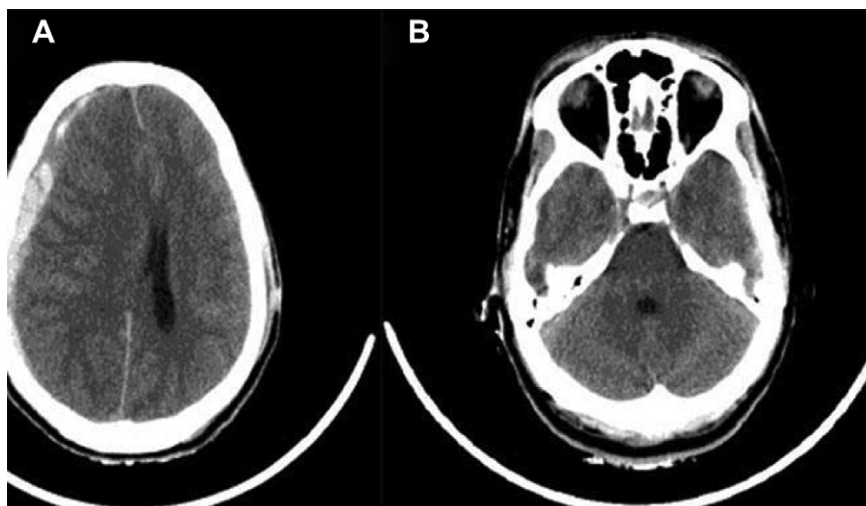


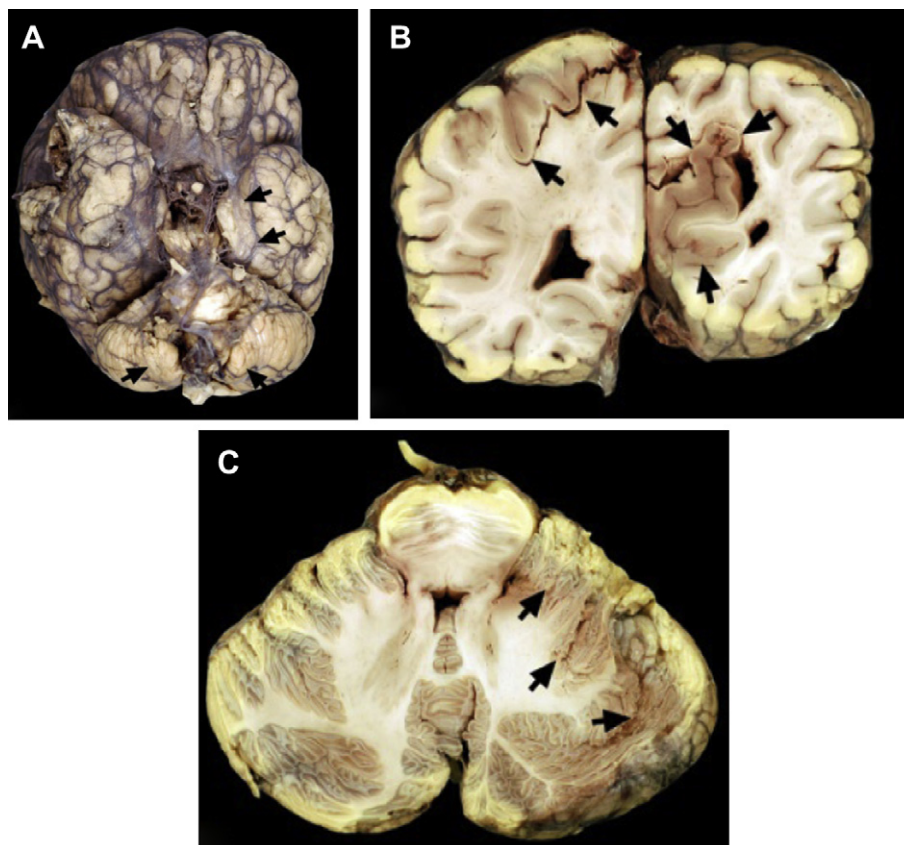
Fig. 1 – A: Preop CT head: Rt FTP acute subdural hematoma. B: Preop CT head.

territories involved in PTCI are ipsilateral PCA territory secondary to transtentorial herniation, contralateral posterior cerebral artery (PCA) territory due to compression of contralateral PCA against tentorial notch, and anterior

cerebral artery territory ischemia due to subfalcine herniation.<sup>1</sup> Posterior fossa infarcts following trauma are often a result of vascular dissections or vertebrobasilar spasm, embolization, systemic hypoperfusion and posterior inferior



Fig. 2 – Post op CT head: left SCA infarct.



**Fig. 3 – A:** Basal view of brain showing subarachnoid hemorrhage, bilateral asymmetric hippocampal uncus herniation (right > left, arrows) and bilateral cerebellar tonsillar herniation (right > left, arrows). **B:** Congested ischemic lesions with edema and breakdown of adjacent whitewater are noted in the left posterior part of superior parietal lobule (arrows) and right calcarine cortex (arrows) reflecting PCA territory infarct. **C:** Horizontal sections through the cerebellum reveal left superior cerebellar territory infarct (arrow) with enhanced cerebellar folial architecture secondary to hypoperfusion.

cerebellar artery (PICA) territory is the commonest territory involved.<sup>2</sup>

The superior cerebellar artery is the most consistent branch of the basilar artery and arises near the bifurcation of the basilar artery. Different variations in the superior cerebellar artery have been described including duplication, triplication, and extraordinary origins. Origin of the superior cerebellar artery from the posterior cerebral arteries is seen in 2.6<sup>4</sup>–4%<sup>6</sup> but a bilateral occurrence of this variation is extremely rare.<sup>4,5</sup> Such anatomical variations can be explained by the embryological development in this region.

Superior cerebellar infarcts are the second commonest infarct in the posterior fossa following thromboembolic events during acute ischemic stroke, after PICA infarcts.<sup>3</sup> However, SCA infarcts have not been recorded following trauma, to the best of our knowledge.

So, we suggest that there could have been an abnormal origin of SCA from PCA and due to compression of PCA, patient developed infarct in SCA territory. Another possibility is vertebrobasilar spasm causing this infarct, however, absence of ischemic infarcts in zones corresponding to basilar artery branches makes this possibility less likely.

### 3. Conclusions

Superior cerebellar artery infarct following trauma is extremely rare. Abnormal origin of superior cerebellar artery from posterior cerebral artery, could be the likely cause of the infarct.

### Conflicts of interest

All authors have none to declare.

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