

## Sequential Thalamic Hemorrhage and Ischaemia in the Percheron Artery Territory

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### Abstract

Bilateral thalamic ischemia and hemorrhages are unusual [1-5]. They almost exclusively affect the posterior paramedian thalamic region supplied by the artery of Percheron and rarely the anterior polar artery territory causing a variety of cognitive, arousal and personality deficits [6].

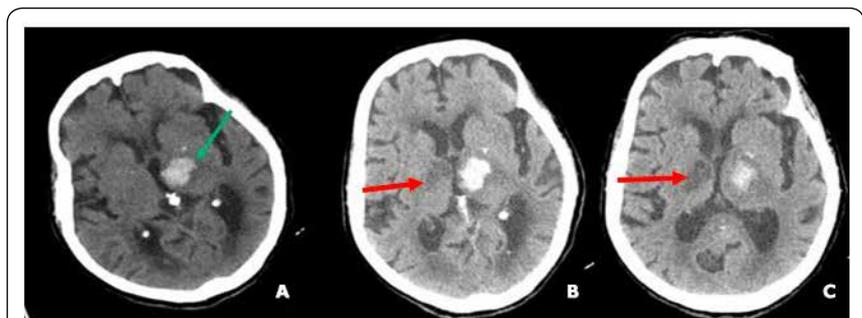
To our knowledge, we report the first patient who had the unusual presentation of a left paramedian hypertensive thalamic hemorrhage followed within three days by a right paramedian thalamic infarction.

### Keywords

Hypertension, Hemorrhagic

### Case Report

An 84-year-old woman was found with an altered mental status and right hemiparesis. She had CHF, hypertension and hyperlipidemia under adequate pharmacologic treatment. An initial CT (Figure 1A) showed a left paramedian thalamic hemorrhage with mass effect over the third ventricle (arrow). Her blood pressure on admission was 190/100 mmHg requiring IV labetalol and sodium nitroprusside for control. Her EKG revealed AF and the general laboratory results were normal including sed rate. Transcranial doppler results did not reveal abnormal velocities suggestive of stenosis in the posterior circulation. At 72 hrs from admission her mental status deteriorated and a new CT (Figure 1B) did not show hydrocephalus or significant changes in the hemorrhage although a new hypodensity was observed in the right paramedian thalamic territory. On



**Figure 1:** CT evolution over a week showing the left thalamic hemorrhage (green arrow in figure A) and a right thalamic infarction (red arrows in figures B and C).

day 5, she did not follow commands, her speech was severely dysarthric and weakness on the right became more severe. A CT (Figure 1C) confirmed the infarction on the right paramedian thalamic territory. On day 7 the patient was stuporous, was intubated and died 24 hrs later.

Hemorrhagic vascular thalamic lesions occur most commonly in the lateral thalamo-geniculate artery territory (75.9%) followed by the paramedian (15.5%), posterior choroidal (5.3%) and the anterior polar artery (3.3%) territories [7]. Thalamic hemorrhages are more common in elderly individuals with hypertension as was the case of our patient [7, 8]. Bilateral thalamic hemorrhages have rarely been reported [4]. Bilateral thalamic ischemic vascular lesions have been reported as 0.6% of all infarctions [5]. Bilateral ischemia may occur because the artery of Percheron supplies the paramedian nuclei bilaterally in up to 12% of individuals [1, 2, 9]. At times, the anterior thalamic nuclei, usually supplied by the polar artery arising from the posterior communicating artery on each side, may receive their vascular supply from the Percheron artery or from a single polar artery explaining bilateral anterior paramedian infarctions [3]. A venous infarction would be unlikely in an 84-year-old without history of a hypercoagulable state and imaging is supportive of arterial territory rather than venous (more diffuse and with associated edema) compromise. Atrial fibrillation could cause small vessel disease; however, the CT was obtained within a few hours from stroke onset without allowing time for such a significant hemorrhagic transformation. Our patient had a left thalamic paramedian hemorrhage secondary to hypertension followed by an ischaemic stroke in the same vascular territory of the contralateral side. The left sided arteriolar branch of Percheron's artery likely developed a saccular Charcot-Bouchard aneurysm that ruptured causing a hemorrhage. We postulate as probable explanations of the exceptional scenario

of hemorrhage and contralateral thalamic infarction that mass effect from the hemorrhage strangled the right sided Percheron's arteriole branches leading to infarction in that territory or alternatively that vasospasm occurred secondary to the presence of blood resulting in ischemia and infarction on the right.

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