

Convexity Subarachnoid Hemorrhage Due to Cardioembolic Stroke in a Woman with Thyrotoxicosis: A Case Report

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Background: Non-traumatic convexity subarachnoid hemorrhage (cSAH) is a rarely reported condition with a wide spectrum of etiologies. Cerebral ischemia secondary to extracranial or intracranial atherosclerotic disease has been identified as a relatively uncommon cause of cSAH. *Case report:* We report a case of cSAH caused by cardioembolic stroke. A 69-year old female patient developed suddenly left-sided face and body weakness and numbness and visual neglect on the left. She was newly detected with paroxysmal atrial fibrillation on the ground of thyrotoxicosis. Brain magnetic resonance imaging revealed ischemia of embolic pattern with cSAH. Further evaluation excluded other cause of hemorrhage. Dilatation of leptomeningeal collateral vessels and rupture of pial vessels in distal cortical arteries may caused cSAH. Full anticoagulation was initiated. After one month, her condition improved significantly (NIHSS from 6 to 2). *Conclusions:* cSAH may be a rare complication of cardioembolic stroke. **Key Words:** Embolic stroke—cSAH—atrial fibrillation—cortical sulci.

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Introduction

Non-traumatic convexity subarachnoid hemorrhage (cSAH) is a rarely reported condition where the hemorrhage is located in one or a few cortical sulci, without involvement of the basal cisterns, the sylvian fissure, or the ventricles.

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Cerebral ischemia secondary to carotid atherosclerotic disease has been identified as a relatively uncommon cause of cSAH.^{1,3}

We report the first case, to our knowledge, of cSAH due to cardioembolic stroke.

Case Report

A 69-year old woman developed suddenly left-sided weakness and numbness, with moderate headache. Paroxysmal atrial fibrillation, on the ground of thyrotoxicosis, had been detected 10 days before and antithyroid medication initiated (thiamazole 30 mg per day).

Upon presentation, she was on sinus rhythm. Neurologic examination revealed hemiparesis and sensory loss on the left side of face and body and also visual neglect on the left, without meningism. The National Institutes of Health Stroke Scale/Score (NIHSS) was 6.

Brain computed tomography scan on the day of admission was normal. After two days, follow-up imaging

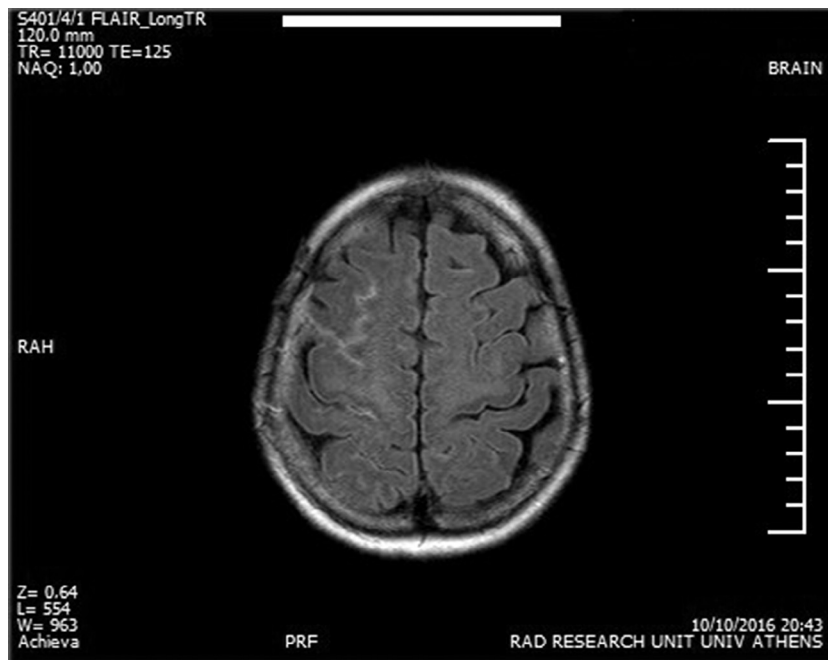


Figure 1. Fluid-attenuated inversion recovery sequence depicts cSAH and acute infarctions in the right hemisphere.

with magnetic resonance imaging revealed acute infarctions with cortical involvement in the distribution of the right middle cerebral artery and cSAH (Fig 1).

Further evaluation with extracranial and transcranial color-duplex sonography, brain magnetic resonance angiography, and venography showed no abnormalities. Finally, digital subtraction angiography of neck and head excluded aneurysm or other vascular malformations as cause of hemorrhage.

The ischemic stroke was classified as cardioembolic, and full anticoagulation was initiated (Nadroparine 0, 6 ml twice a day).

In 1-month follow-up she had residual left upper- and lower limb weakness (NIHSS 2) and slight disability (modified Rankin Scale 1).

Discussion

Nontraumatic cSAH is a rare condition. Existing information is largely derived from case reports and small case series.

Clinical presentation, neuroradiological findings, and underlying etiologies differ clearly from the majority of subarachnoid hemorrhages (SAHs).^{4,6} Chief complaint is unspecific headache (75%). Thunderclap headache is uncommon and in only 5% of cases nuchal rigidity has been reported.^{4,6}

Reversible cerebral vasoconstriction syndrome in patients < 60 years and cerebral amyloid angiopathy in older patients are the main etiologies suggested.⁷ Convexity SAH has been rarely described in relation with ischemic stroke, mainly arterioembolic.^{1,3} Dilation of leptomeningeal collateral vessels and rupture of pial vessels in distal cortical

arteries,^{5,8} due to cortical ischemia, could be a possible explanation for both arterio-embolic and cardioembolic strokes.

Conclusion

Convexity SAH may be a rare complication of acute cardioembolic ischemic stroke.

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