rological deterioration was only prevented by pharmacologically induced elevation of blood pressure, supporting the need of an urgent revascularization to prevent additional permanent damage. At least partially, cerebral perfusion to the left hemisphere could also have been improved by stenting the high-grade stenosis at the origin of the left VA. While we did not find any reports on emergency bypass surgery of an occluded CCA, we encountered several case reports and small studies dealing with both successful emergency thrombendarterectomy or angioplasty and stenting of an occluded ICA [5, 6]. In contrast to an endovascular approach, in our case the surgical approach offered the opportunity to ligate the CCA to prevent further embolic events, which often arise from the stump of an occlusion [7]. Despite the lack of a generalized efficacy of bypass surgery for occlusive carotid disease [8], emergency surgical recanalization of an acute atherothrombotic CCA occlusion is technically feasible and holds promise to avoid major stroke in selected cases with insufficient cerebrovascular collateralization or repeated post-occlusive thromboembolic events.

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Cardiac Hemangioma of the Right Atrium: A Possible Cause of Cerebellar Stroke

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Case

We report on a possible paradoxical embolization via interatrial defect (IAD) from a cavernous hemangioma of the right atrium leading to a cerebellar stroke. This is an unusual clinical presentation with a location that is uncommon for this rare type of heart tumor [1].

A 57-year-old man was admitted to our hospital with an acute transitory syndrome: sudden bilateral tinnitus and vertigo followed by onset of coma with a Glasgow Coma Scale score of 3 lasting around 10 min. After this, the patient was alert and the neurological examination normal. Continuous ECG monitoring showed stable sinus rhythm, while diffusion-weighted brain MRI (DWI-MRI) scans were negative. During hospitalization the patient developed nausea and vomiting, saccadic eye movements, an unidirectional right beating nystagmus of the primary and bilateral gaze positions and left mild hemiataxia. DWI-MRI revealed a small ischemic infarction of the left superior cerebellar artery territory. Thrombophilic screening, neoplastic markers, autoimmune assays and cerebral angiography were negative. An acute coronary syndrome, without coronary stenoses, had occurred 4 years earlier, so aspirin was started.

Transesophageal echocardiography revealed a sessile neoforation inside the right atrium and on the posterior part of the interatrial septum, which caused a partial obstruction of the inferior vena cava (IVC) orifice. The remaining anterosuperior interatrial septum appeared to be aneurysmatic with an IAD inside the area of the fossa ovalis. During Valsalva maneuver right to left shunt was evidenced. No other cardioembolic lesions (i.e. aortic plaques, left atrial appendage thrombi) were found. Embolic cardiac right atrial myxoma was suspected. Coronary angiography documented neither significant atherosclerotic lesions nor vascular distortions. Eighteen days after stroke onset, the tumor was surgically removed. An oval, red-brown colored, elastic, uniformly endothelialized, sessile cardiac neoplasm (4 cm in diameter) was removed. There was no evidence of ulceration or clot adhesion on the surface (fig. 1).

The cardiac tumor had a wide base attachment at the level of the inferior part of the interatrial septum, near the IVC orifice, which partly obstructed the IVC orifice. The wide implant surface and elastic consistence did not lead to occlusion of the IVC or tricuspid valve. The mass was resected and IAD closed by direct suture; histological examination revealed it to be a cardiac cavernous hemangioma (fig. 2). The patient was discharged on the 7th postoperative day. At the 6-month follow-up no vascular

Fig. 1. Intraoperative view (before excision of the right atrial neoformation). 1 = Hemangioma; 2 = tricuspid valve; 3 = IVC orifice; 4 = interatrial septum.

Fig. 2. Histologic examination of the explanted right atrial neoformation reveals it to be a cavernous hemangioma. From Paolo Giovenali, MD, II Cattedra Anatomia Istologia Patologica, Università di Perugia, Italy.

event was reported and the patient had a modified Rankin Scale score of 1.

This is, to our best knowledge, the first reported case of right atrial hemangioma coexisting with atrial septal defect. Less than 36 antemortem cases of cavernous hemangiomas were reported until 2004 [2]. We were able to find only 1 case in the literature of stroke in right atrial hemangioma, which was a part of a series of patients that did not include clinical history or imaging performed during surgery. Additionally, the presence of interatrial communication was not specified [3].

In our case, neurological signs seemed to be due to paradoxical embolization and not to either flow obstruction or to heart arrhythmia despite the tumor being close to the electric conduction system. Considering the high risk of recurrent embolization, the patient quickly underwent surgery despite the risk of brain bleeding in the infarcted area during systemic heparinization [4]. The intraoperative findings revealed embolism from the tumor surface to be improbable. There were no atherosclerotic lesions in the carotid arteries or ascending aorta, intracranial vascular abnormalities, intracardiac clots and deep venous thrombosis. Thus, what was the possible source of embolism? An explanation could have been a venous blood stasis caused by IVC partial obstruction leading to a clot formation with a subsequent paradoxical embolization via the IAD. It is possible to hypothesize that the acute coronary syndrome occurred 4 years before was also due to paradoxical embolization. However, 2 weak points of this hypothesis are that there had been no thrombophilic pattern and the patient had already been on aspirin. On the other hand, no other potential embolic sources were found.

Conclusion

Right atrial hemangioma could be an uncommon cause of stroke combined with IAD. Surgical removal of a cardiac neoplasm in extracorporeal circulation and systemic heparinization seems to be a feasible procedure even in the third week after a stroke of small dimension.

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