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Rare Case of Secondary Headache Due to Intracranial Dural Arteriovenous Fistula

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Introduction

Spontaneous subarachnoid hemorrhage (SAH) accounts for 5% of all strokes, 85% caused by the rupture of intracranial aneurysms. There are many potential causes of non-aneurysmal SAH (15%), sometimes the source of bleeding is not identified. Up to 10% of SAH cases are caused by vascular malformations, such as cerebral arteriovenous malformations (AVMs) or dural arteriovenous fistulas (DAVF), which account for 15% of these malformations. DAVF is defined by an abnormal connection between branches of arteries and veins in the dura mater.

Objectives

We present a rare case of secondary headache due to DAVF.

Case report

A 55-year-old female presented to the emergency department reporting "the worst headache of her life". In the previous week, she experienced a mild occipital headache. Her medical history included systemic hypertension, treated breast cancer, currently taking the oral aromatase inhibitor Letrozole, and right mastoidectomy due to recurrent otitis. Blood pressure, neurological and general clinical examination were unremarkable. Due to alarm signs in her history, a cranial CT scan of the head with and without contrast was performed, showing minimal cortical hyperdensity in the left frontal region suggestive of subarachnoid hemorrhage. Subsequently, an MRI was performed, confirming minimal hyperintensity on FLAIR. Magnetic Resonance Angiography (MRA) was unremarkable. She underwent cerebral digital subtraction angiography, which demonstrated a right parietal dural arteriovenous fistula – with irrigation by the posterior meningeal artery (branch of the ascending pharyngeal artery) and drainage to a single cortical vein, classified as Cognard type 3. Embolization of the fistula was performed using liquid embolic material, resulting in complete resolution, and the patient was discharged asymptomatic 2 days later. After 2 years of follow-up, she remained free of new headaches, and control angiography showed total exclusion of the fistula.

Conclusion

Dural arteriovenous fistulas with cortical venous drainage are associated with a high risk of bleeding and early rebleeding. The history of right mastoidectomy, as the oral taking of aromatase inhibitor were considered as possible risk factors in our case. This case report illustrates the importance of paying attention to alarm signs related to headaches, as well as conducting proper and early investigation and treatment.