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Case Report

Unruptured bilateral supra-clinoid internal carotid artery aneurysms: A case report [☆]

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ABSTRACT

Unruptured supra-clinoid carotid aneurysms are rare aneurysmal dilatation of the supra-clinoid segment of internal carotid artery. Most cases are asymptomatic and discovered incidentally, while others may present with compressive symptoms on cranial nerve II, the optic nerve. We present a case of a 44-year-old female who presented with chronic headache and gradual decreased visual acuity. The patient's imaging workup revealed bilateral supra-clinoid carotid aneurysms.

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Introduction

Unruptured intracranial aneurysms are usually asymptomatic and commonly seen at the bifurcation of arteries of circle of Willis. If they rupture, they result in subarachnoid hemorrhage which is a life-threatening complication and require urgent attention [1]. Small internal carotid artery aneurysms (diameter <10 mm) are usually asymptomatic. However, when they enlarge, they cause a local mass effect on adjacent structures and accordingly symptoms start [2,3]. It is rare to have bilateral supra-clinoid aneurysms of the internal carotid arteries [4].

Case report

A 44-year-old woman presented to the neurology clinic with a chronic headache associated with progressive loss of visual acuity for 6 months. The headache was unilateral to the left side and throbbing in nature. The headache was associated with blurring of vision, photophobia, and vomiting. The headache partially responded to over-the-counter medication for headache including paracetamol and naproxen. No history of fever, loss of consciousness, seizures, motor, or sensory loss. She denied any history of trauma or a previous similar episode.

She had no significant past medical or surgical history. There was a positive family history of subarachnoid hemorrhage (father & sister). On physical examination, the patient

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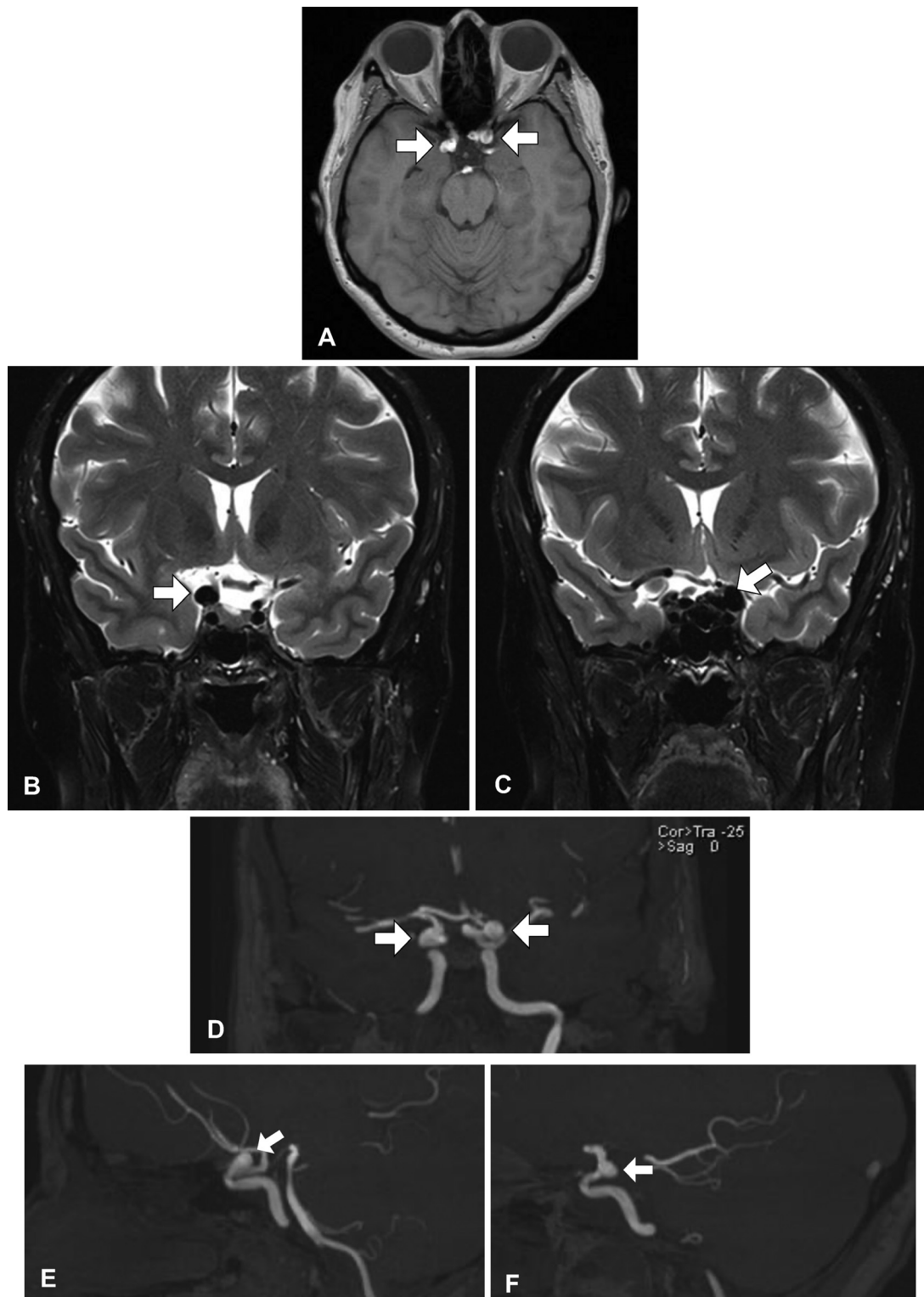


Fig. 1 – MRI of the brain. Non-contrast enhanced images in axial T1W (A) and coronal T2W images (B, C) cuts showing flow void within bilateral supraclinoid internal carotid artery saccular aneurysms (white arrows). The right saccular aneurysm in the supraclinoid portion after the origin of the right ophthalmic artery and abutting the pre-chiasmatic portion of the right optic nerve. (A, B) The left saccular aneurysm is in the supraclinoid portion abutting the origin of the left ophthalmic artery and compressing on the pre-chiasmatic portion of the left optic nerve as well as the left aspect of the optic chiasm. (A, C) Time of flight (TOF) images (D-F) representing the aneurysms (white arrows).

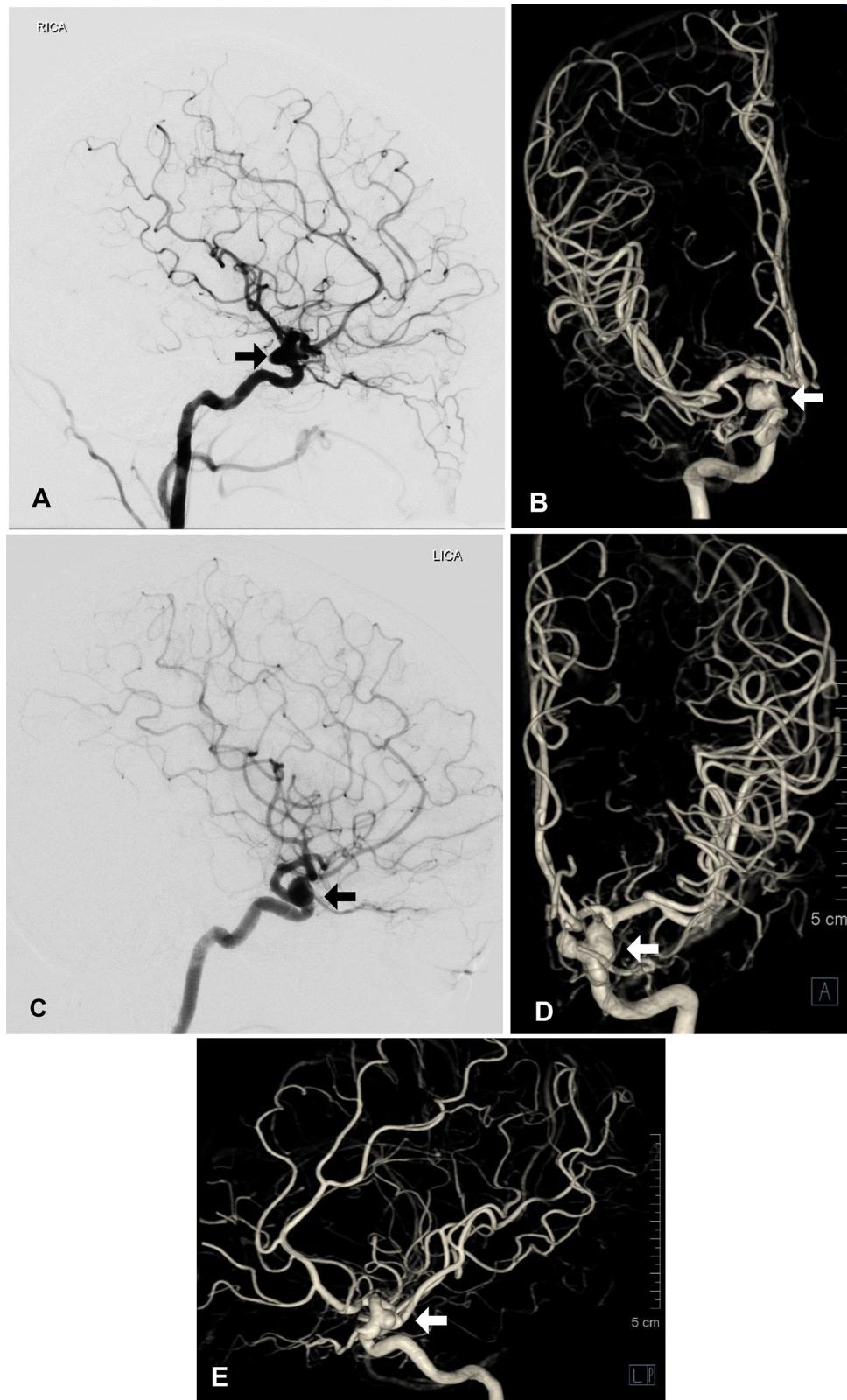


Fig. 2 – Digital subtraction angiogram (DSA) of right and left carotid arteries done through right femoral artery percutaneous access under local anesthesia using 4F sheath wire. Angiogram in lateral projection, and 3D reconstruction of the right internal carotid artery (A, B) showing wide neck aneurysm (white & black arrows) located within the supra clinoid segment of the right internal carotid artery, pointing in cranio-lateral direction and measuring 6 mm in diameter. Angiogram in lateral projection, as well as 3D reconstructed images (C-E) of left internal carotid artery showed wide neck, lobulated aneurysm (white & black arrows) located within the para ophthalmic segment of the left internal carotid artery. It was pointing in a cranio-medial direction and measuring 8 mm in diameter.

was vitally stable and afebrile. She was alert, oriented with person, place, and time, & obeying commands. There were no signs of skin or joint involvement. Neurological examination revealed reduced visual acuity, otherwise, intact cranial nerves examination, intact sensory and muscle power and tone in four limbs, and normal gait.

An MRI of the brain was performed and demonstrated bilateral supra-clinoid internal carotid artery saccular aneurysms causing optic pathway compression on the pre-chiasmatic portion of both the optic nerves as well as the left aspect of the optic chiasm. MR angiography confirmed the presence of bilateral aneurysms (Fig. 1).

Bilateral internal and external carotid angiography further established the diagnosis of unruptured bilateral internal carotid aneurysms located along the walls of the supra-clinoid part of both internal carotid arteries (Fig. 2).

The patient was offered different possible treatment options including endovascular treatment with flow diverter stent or surgical intervention with coiling. The patient eventually underwent flow-diverter stent insertion and has tolerated the procedure well.

Discussion

Unruptured intracranial aneurysms account for up to 3% of the general population and are commonly seen at the bifurcation of arteries of circle of Willis. They are generally asymptomatic unless they rupture resulting in subarachnoid hemorrhage which is the most dreaded complication [1,2].

Aneurysms of the carotid artery that arise from the internal carotid artery particularly supraclinoid Internal carotid artery (ICA) can remain asymptomatic if small (<10 mm in diameter) or may progress and enlarge causing headache and cranial nerve palsies particularly visual deficits caused by the local mass effect of the aneurysm on the anterior optic pathway. Blood supply to the anterior optic pathway may also be affected and diminished by compression on the ophthalmic artery [3]. To our knowledge and based on literature review, it is rare to have bilateral supraclinoid aneurysms of the carotid arteries and there has been only one case found reported in the literature [4].

Unruptured supra-clinoid carotid aneurysms are more frequently diagnosed with MRI particularly those presenting with compressive symptoms on the visual pathway. MRI is

also useful in ruling out other differential diagnoses and follow up. Digital subtraction angiography remains the gold standard for confirmation of diagnosis and assessment for potential surgical or endovascular planning [1,2].

However, their management is still controversial due to the natural history of these vascular lesions and associated risks of their repair. There are two types of treatment: surgical clipping and endovascular coiling. Both treatment methods effectively prevent rupture [5,6]. Otherwise, conservative management is reserved for asymptomatic aneurysms measuring less than 10 mm as they are less likely to rupture [5] and followed up with repeat imaging 6 months after diagnosis then annually for 3 years [1].

Patient consent

A written consent was obtained from the patient for publication of this case and any accompanying images.

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