

Anterior-wall aneurysm of the internal carotid artery successfully treated solely by stenting: With special reference to etiology

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In this case, a ruptured anterior wall aneurysm of the internal carotid artery disappeared on angiography immediately after stent placement. We focus on the underlying nature of the lesion and this possible alternative treatment.

Introduction

Aneurysms arising from the anterior wall of the internal carotid artery (ICA), reportedly composing 0.3% to 1% of all intracranial aneurysms or 0.9% to 6.5% of those involving the ICA (1, 2), are usually not related to arterial division and vary widely in shape. In many patients with this particular type of aneurysm, soon after subarachnoid hemorrhage the initial angiogram shows only a small bulge, which may progress to a saccular appearance within a few weeks (3). An earlier postmortem study demonstrated disappearance of internal elastic lamina and media at the border between the eccentrically sclerotic and normal carotid wall, indicating laceration due to degeneration of the internal elastic lamina and media as the pathogenesis (4).

Case report

A 63-year-old woman suffered from a subarachnoid hemorrhage, and was admitted to another hospital. 3D CT

angiography (CTA) and angiography showed a tiny bulge (a “blood blister-like” aneurysm) on the surface of the anterior wall of the distal right ICA (Fig. 1A). Fourteen days later, re-rupture of the aneurysm occurred. 3D-CTA and conventional angiography demonstrated that the blister-like aneurysm had progressed to a saccular type (Figs. 1B and

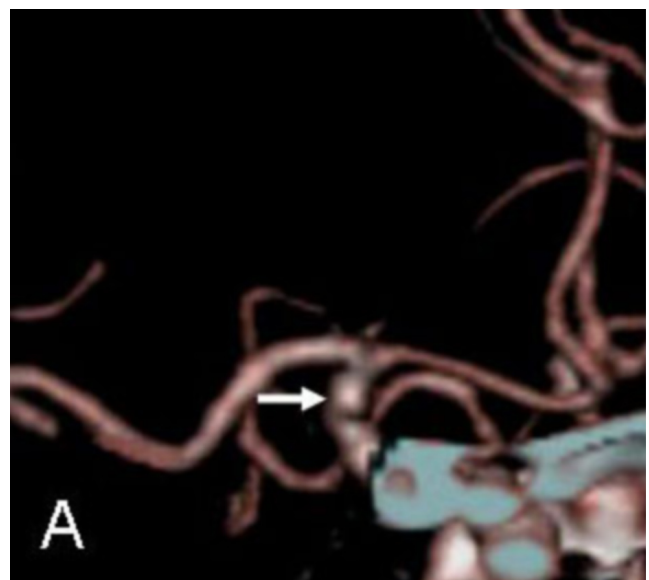


Figure 1A. 63-year-old female with anterior-wall aneurysm of the ICA. 3D CTA delineates a tiny bulge (“blood blister-like” aneurysm) on the surface of the anterior wall of the distal right ICA (arrow).

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IC). On transfer to our institute for treatment of a life-threatening aneurysm, neurological status was grade II on the H&H grading scale. Endovascular surgery using a stent-in-stent without coil embolization (because of the danger of re-rupture) was initially intended. A 7F sheath was introduced into the right femoral artery; then a 7F catheter (Launcher Peripheral guide catheter, Medtronic Vascular,

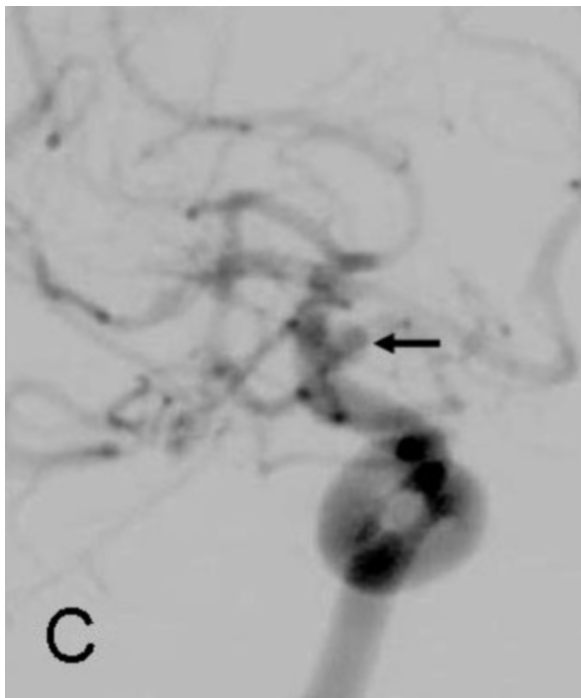
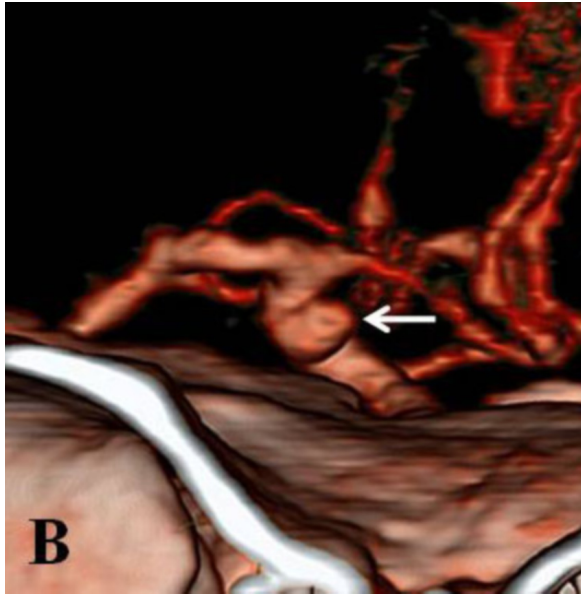


Figure 1B. 63-year-old female with anterior-wall aneurysm of the ICA. 3D-CTA 14 days after the initial symptoms, just after the aneurysm re-ruptured, shows progression to a saccular type aneurysm (arrow), clearly demonstrable by angiography (arrow) (Fig. 1C).

USA) was introduced into the right ICA, preceded by a 5F catheter (Cathex, Japan) with a coaxial system. A microcatheter (Prowler Select Plus, Codman, J & J, USA) was advanced into the right middle cerebral artery (MCA) beyond the aneurysm (Fig. 1A), and a self-expanding nitinol stent 28mm in length (Enterprise, Codman, J&J, USA) was put in place from the M1 portion of the MCA to the paraclinoid portion of the ICA to cover the normal arterial wall beyond the aneurysm.

Angiography immediately after the stent placement showed disappearance of the aneurysm (Fig. 1D); repeated angiography 10 minutes later also showed no aneurysm, so additional stent placement was not performed. The clinical course was uneventful, and followup angiography at three days and then two months (Fig. 2A) after the treatment showed no aneurysm. However, followup 3D-CCTA at the two-month time point did reveal recurrence (Fig. 2B). The patient was conservatively followed up because direct inflow

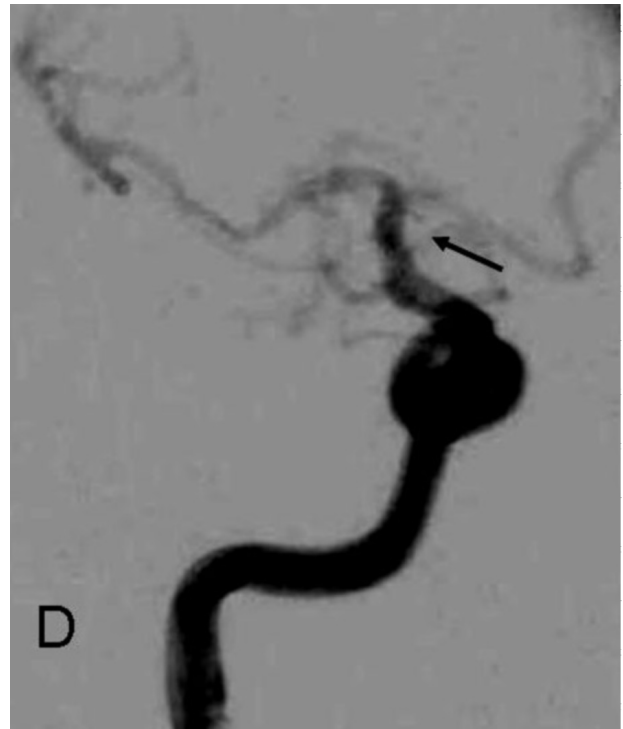


Figure 1D. 63-year-old female with anterior-wall aneurysm of the ICA. Right ICA angiogram immediately after the stent emplacement indicating disappearance of the aneurysm (arrow)

into the aneurysm was not present on conventional angiography, while slight residual inflow remained on 3D-CCTA. Since additional followup 3D-CCTA three months after the treatment showed remarkable diminution in the size of the aneurysm (Fig. 2C), no further treatment was planned. After four months, the aneurysm had disappeared (Fig. 2D), and the clinical course was subsequently uneventful without neurological deficit.

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