Endovascular Treatment of a Distal C1 Dissecting Aneurysm in a Patient with Double Aortic Arch

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To the Editor: Double aortic arch (DAA), a rare congenital cardiovascular disorder, is usually diagnosed and surgically corrected at an early age due to dyspnea or dysphagia caused by an obstruction of trachea or esophagus.[1] Here, we report a case with DAA and a dissecting aneurysm, which was successfully performed by stent-assisted coiling.

A 65-year-old man with a history of smoking for 30 years was hospitalized in our stroke unit with a complaint of recurrent transient right-side numbness. Brain magnetic resonance imaging (MRI)/magnetic resonance angiography did not demonstrate any abnormities. However, he experienced another two same episodes before discharge. Further, head and neck computed tomography angiography (CTA) showed a complete DAA and a dissecting aneurysm in the distal C1 segment of the left internal carotid artery (ICA) [Figure 1a-1d]. Then, a rechecked MRI showed a new infarction lesion located in the left thalamus [Figure 1e].

First, digital subtraction angiography (DSA) was performed to define the shape and size of the aneurysm and endovascular access. DAA (a complete vascular ring) and the dissecting aneurysm [Figure 1f-1g] were confirmed by DSA. The brachiocephalic trunk was originated from the right aortic arch; the left common carotid and the left subclavian arteries were branched off the left one. A wide-necked dissecting aneurysm was located in the distal C1 segment of the left ICA, which was consistent with CTA.

Based on the decision of our multidisciplinary team, stent-assisted coiling was planned for this patient. Dual antiplatelet and intensive statin therapy were administered for 3 days before interventional treatment. After microcatheter was advanced into the body of the aneurysm by the left aortic arch, a three-dimensional (3D) basket coil (3D ev3 Axium 4 mm × 8 cm) was released, forming the framework for further embolization. Then, a stent (ev3 Solitaire AB 6–30 mm) was navigated over an exchange wire and deployed across the aneurysm. Excellent stent placement across the neck of the aneurysm was demonstrated. Then, another coil (3D ev3 Axium 7 mm × 30 cm) was released through the microcatheter. Control angiography demonstrated complete occlusion of the aneurysm, and distal ICA territory was seen filling [Figure 1h]. During the perioperative period, no complications were found. Dual antiplatelet agents were sequentially administered for 3 months, and aspirin is taken for life.

The incidence of detecting asymptomatic unruptured aneurysms is recently increasing with remarkable developments in neuroimaging techniques.[2,3] Endovascular treatment with lower mortality and high long-term occlusion rate has emerged as a valid alternative to surgical clipping in elderly patients with unruptured intracranial aneurysms.[4,5] Stent-assisted coiling is an effective method for the treatment of wide-necked dissecting aneurysm. Overlapping the stent across the neck of the aneurysm provides more metal coverage to reduce hemodynamic flow of the dissecting aneurysm. It will also avoid migration of the thrombus into the blood flow from aneurysm leading to thromboembolic complications.

Stent-assisted coiling was successfully performed for this case. During the follow-up period, DSA showed that no recurrence of the aneurysm and no complications were observed, which suggested that stent-assisted coiling was a safe and effective treatment for this condition.

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Conflicts of interest

There are no conflicts of interest.

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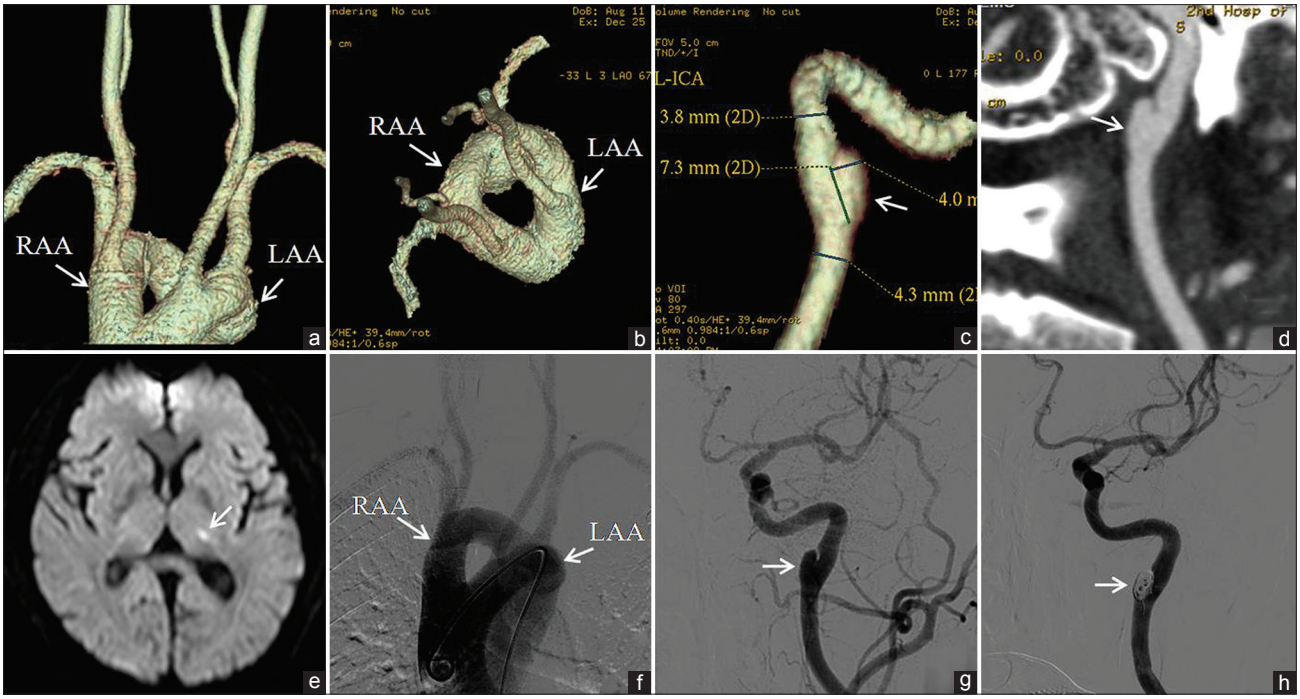

Figure 1: Computed tomography angiography and digital subtraction angiography indicated the double aortic arch (a, b, and f) and the aneurysm in left internal carotid artery (c, d, and g). Magnetic resonance imaging showed a new infarction lesion in left thalamus (e). Local angiography demonstrated complete occlusion of the aneurysm after operation (h).

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