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Case Report

Stent Combined with Spring Coil Before Embolization and Internal Carotid Artery C7 Segment Aneurysm and Related Literature Review

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Abstract

The incidence of anterior communicating aneurysm is high, and the rupture rate is also high. The occlusion of anterior communicating aneurysms is difficult, and the number of cases of intracavascular therapy has increased in recent years. Most cystic aneurysms are characterized by the anterior part of the circle of Willis artery and the middle cerebral artery (MCA), among which the ACA region is the most common, especially Acom tumors, which account for 35% of the total cerebral aneurysms. According to the survey, the annual rupture rate of Acom tumors is 1.31%, and the rupture rate is twice that of MCA. In addition, the annual rupture rate of posterior communicating aneurysms over 7mm was 3.28%, second only to anterior communicating aneurysms. An observational study of small unruptured intracranial aneurysms showed that the rupture rate of brain aneurysms below 5mm was 0.54% per year, but the rupture rate of anterior communicating aneurysms may be higher compared to aneurysms at other sites. Therefore, treatment of unruptured aneurysms with a diameter greater than 5-7mm is recommended in the Stroke Treatment Guidelines 2015, but for anterior communicating aneurysms, even below this size, careful consideration is recommended..

Keywords: Stent Combination, Coil Embolization, Anterior Communicating Aneurysm.

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Introduction

In the treatment of anterior communicating aneurysms, the important factor determining access from the left and right A1 is the diameter of the A1. Generally speaking, ACA aneurysms mostly protrude in the coaxial direction of A1 on the dominant side, so it is often more advantageous to choose A1 on the dominant side as the embolization route (Fig.1). In this case of anterior communicating aneurysm, A1 on the left side was used as the dominant side, so A1 on the dominant side was selected as the embolization route, and the catheter was sent to the A2 segment of the contralateral anterior cerebral artery.

Case Summary

A 67-year-old woman presented with "headache for more than 10 days."The patient had dizziness more than 10 days ago, which was episodic, and could be improved after rest. There was no dizziness, no nausea, vomiting and limb movement disorder, no blindness, no ptosis. 10 days ago, he was admitted to a local hospital, and CTA indicated anterior communicating aneurysm and left internal carotid artery C7 aneurysm. Now he received endovascular treatment and was admitted to our hospital as "intracranial aneurysm" in the outpatient department. Previous history: more than 10 years after cholecystectomy. Patients with hypertension, blood pressure up to 170/100mHg oral medication. Denied diabetes, history of coronary heart disease. Neurological examination showed no abnormality. Auxiliary examination of CTA: anterior communicating aneurysm, left internal carotid artery C7 aneurysm. After admission, relevant examinations were completed and further confirmed by cerebrovascular angiography: anterior communicating aneurysm and left internal carotid artery C7

aneurysm. Surgical procedure: left femoral artery approach under general anesthesia, 8F artery sheath was inserted, and 6F long sheath was sent into 5F multifunctional catheter under the guidance of 0.035 wire. Left internal carotid artery angiography showed cystic aneurysms (4mm×5mm) at the anterior communicating artery(ACA) and C7 segment cystic aneurysms (13mm×14mm) (Fig.2), and multiple ascus were seen in the aneurysms. The 6F intermediate catheter was sent to the left internal carotid artery (C2), and then Y valve and double tee were connected, one tee was connected with contrast agent, and one tee was connected with continuous pressure infusion of heparin saline. Total cerebral angiography and 3D-DSA were performed. The working Angle was selected, and stent-assisted embolization was performed. Guided by the Synchro microguide wire (0.014 in,200cm), one SL-10 microcatheter was sent to the A2 segment of the contralaterial anterior cerebral artery and the microguide wire was withdrawn. The Echelon 10 microcatheter is sent into the aneurysm cavity under the guidance of the microguide wire (Fig.3). The Echelon 10 microcatheter is inserted 4-12 3D, indicating the instability of the spring ring. Atlas stent (3.0mm×21mm) is given to cover the neck of the tumor for semi-release, and the spring ring is further inserted,Prime 3-8. 3-6; 2-4; 1.5 2; Working position angiography showed that the aneurysm did not develop. After the Echelon 10 microcatheter was withdrawn, conventional anterioral-lateral angiography showed that the aneurysm was no longer developed, and the right internal carotid artery, posterior communicating artery and branch were developed well, and the main vessels were developed well. Left C7 segment aneurysm stent assisted embolization was performed, and the working Angle was selected. A SL-10 microcatheter is sent to the M2 segment of middle cerebral artery and the microguide wire is withdrawn. The Echelon10 microcatheter is sent into the aneurysm cavity under the guidance of the microguide wire, and the Echelon10 microcatheter is placed 12-40 3D, indicating the unstable spring ring and being given Atlas The stent (4.5mm×30mm) covers the neck of the tumor and half-releases, and continues to insert the spring coil,10-30 3D; 9-30 3D; 8-30 3D; 5-10 3D working position angiography showed that the aneurysm did not develop. After the Echelon 10 microcatheter was withdrawn, conventional anterior-lateral angiography showed that the aneurysm was no longer developed, and the main vessels were developed well.

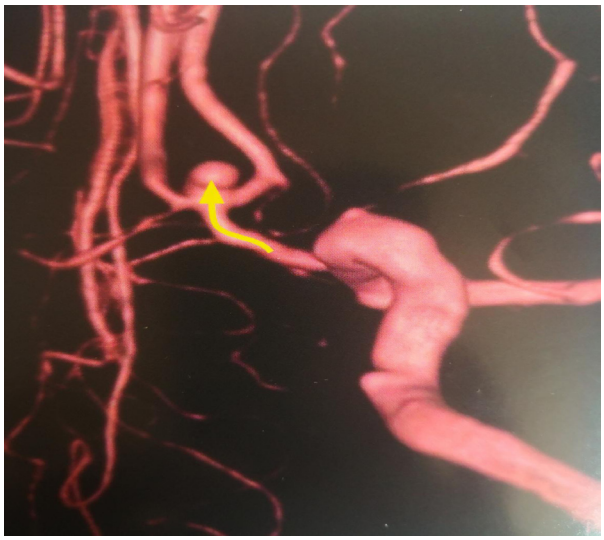

Figure 1. *choose A1 on the dominant side as the embolization route*

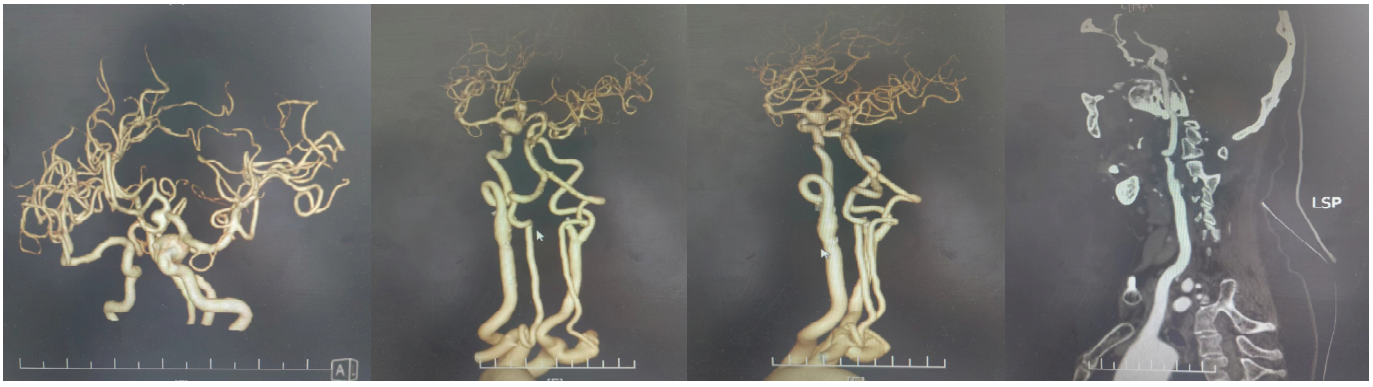

Figure 2. *CTA: anterior communicating aneurysm, left internal carotid artery C7 aneurysm.*

Figure 3. *Left internal carotid artery angiography showed cystic aneurysms (4mm×5mm) at the anterior communicating artery(ACA) and C7 segment cystic aneurysms (13mm×14mm) The Echelon 10 microcatheter is sent into the aneurysm cavity under the guidance of the microguide wire.*

Discussion

One way to avoid perforating the aneurysm due to catheter jump is to first advance the guide wire to A2 and then follow the catheter to A1. When the aneurysm protrudes in the coaxial direction of A1 on the dominant side, the catheter is slowly pushed along A1, and most of the aneurysms can be directly indpended in the aneurysm(Fig.4).

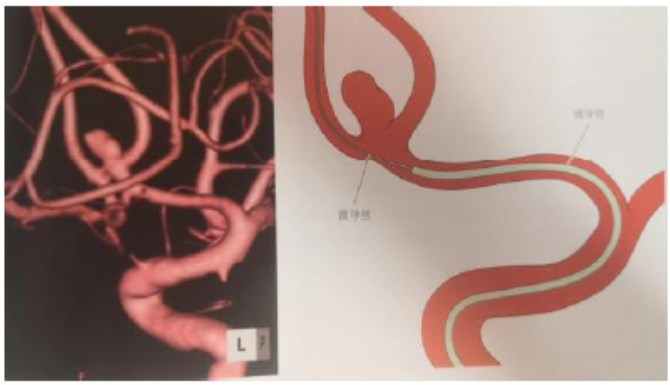

Figure 4. *One way to avoid perforating the aneurysm due to catheter jump is to first advance the guide wire to A2 and then follow the catheter to A1.*

Conclusion

Endovascular techniques for the treatment of cerebral aneurysms provide a less invasive option than surgical clamping. Literature shows that spring-coil embolization of aneurysms at specific sites has a lower complication rate for patients with high-grade lesions. Advances in new technologies, such as three-dimensional spring-coil, balloon assisted remodeling, polymer embolization, stents and flow-guiding devices, and Pipeline embolization devices, etc. This allows vascular surgeons to treat previously untreatable lesions [1-3].

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