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Brief Report of Special Cases

Pseudoaneurysm of the Intracavernous Carotid Artery Following Endoscopic Endonasal Transsphenoidal Surgery, Treated by Endovascular Approach

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Introduction

Carotid artery injury following transsphenoidal microsurgery for sellar lesions [2, 5] or functional endoscopic sinus surgery (FESS) for paranasal sinus pathology [4] is a well known and fortunately uncommon complication of these procedures. It occurs more frequently during the course of re-operations and is associated with significant morbidity and mortality. Endoscopic endonasal transsphenoidal surgery has been recently employed in the routine management of pituitary adenomas [3] and has been proposed as the treatment of choice for recurrences [1], but no similar complication has been reported to date.

Case Report

We present a case of a 22 year-old girl harbouring a recurrent GH-sec macro-adenoma, in whom an intracavernous carotid artery tear was caused by aggressive curettage of the lateral portion of the lesion. Massive arterial bleeding was stopped by meticulous packing. Imaging controls revealed a pseudoaneusysm of the medial wall of the intracavernous internal carotid artery (ICA); the endovascular treatment by means of Guglielmi detachable coils (GDCs) resulted in exclusion of the malformation from the circulation. An angiogram of the right ICA, one year after the embolizing procedure, confirmed the complete occlusion of the pseudoaneurysm (Fig. 1).

Discussion

Previous transsphenoidal surgery, cavernous sinus invasion by the tumour, adhesion of the tumour to the carotid artery and a small sella predispose to a risk of an ICA tear [5]. Acromegaly furthermore is at higher risk for this complication, because of the distorsion of the nasal-sinus anatomy and because of a tendency of subjects with acromegaly to have tortuous and ectatic carotid arteries, sometimes protruding into the sella. The wide surgical field obtained in the endoscopic technique allows a very good visualisation of the intracavernous course of the ICA as compared to the classic microsurgical transsphenoidal approach [1], but it is anyway possible to injure the carotid artery. The bleeding, when it occurs, is profuse, life threatening; immediate intra-operative control of the haemorrhage is urgent and is generally obtained by means of compressive packing. A carotid cavernous fistula or a false aneurysm usually develop later, within three weeks after the injury, but can be also deferred for a number of years.

This natural history demands a modern neuroradiological follow-up by means of non-invasive imaging techniques: postoperative spiral CT and

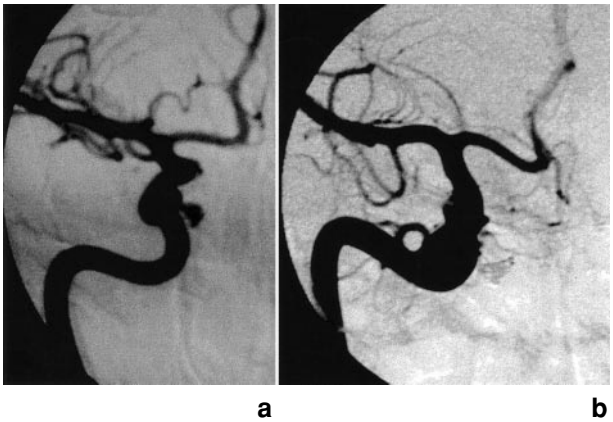

Fig. 1. The angiogram showing a 5 mm pseudo-aneurysm of the right cavernous carotid artery (a) and the control one year after endovascular treatment, with no evidence of aneurysmal filling (b)

angioMR can be sufficient to detect the presence of a pseudoaneurysm. The more invasive angiography, in our opinion, can be employed as a second line of study. Endovascular treatment has been adopted in such cases and it is nowadays a general opinion that the endovascular techniques can be preferred to the direct surgical approach because:

- Are performed more easily;
- Are associated with lower mortality and morbidity;
- Permit a complete exclusion of the lesion from the arterial circulation, with preservation of the parent artery.

The endovascular detachment of GDCs represents a modern minimally invasive treatment of such a condition. We think that it should be preferred, if possible, to the carotid sacrifice or the carotid by-pass followed by carotid sacrifice, because of its lower complication rate and its lower invasiveness.

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