Aneurysms of the cavernous segment of the internal carotid artery with a carotid cavernous fistula and endovascular stent/coil treatment: a case report

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BACKGROUND AND OBJECTIVES
Background: Aneurysms of the cavernous segment of the internal carotid artery is a diagnostic challenge for neurologists. This type of intracranial aneurysm accounts 2% to 9% of all intracranial aneurysms. The risk of subarachnoid hemorrhage is extremely low (0.2-0.4% per year). However, symptoms, for a mass effect, include progressive cranial nerve deficits, visual symptoms, retro-orbital pain, carotid-cavernous fistula (CCF), recurrent transient ischemic attacks, spontaneous thrombosis and epistaxis.

Objective: To describe a a case of aneurysms of the cavernous segment of the internal carotid with CCF treated by endovascular stent/coil treatment.

CASE REPORT:
An 81-year-old woman was admitted to our department for a loss of consciousness. A CT-scan showed a small right frontal ribbon hyperdensity and irregular aspect of right ophthalmic vein.

ON ADMISSION TO OUR DEPARTMENT:
•On neurological examination:
  - drowsiness, right exophthalmos;
  - headache and vision impairment were noted.
•First level laboratory test:
  - CPK
•Electrographic Registration (EEG)
  - recordings showed bifrontal periodic lateralized epileptiform Discharges (PLEDS) suggesting a possible criptic nature of patient’s loss of consciousness. AEDs therapy has been started
•A MRI reported a right carotid-cavernous fistula (CCF) and an expansion of the right internal cerebral vein.

Angiography has been carried out because in MRI angiography, a left carotid-cavernous aneurysm has been observed.

Angiography showed aneurysm of the carotid siphon on the left, that broke in the ipsilateral cavernous sinus, led to the formation of carotid-cavernous fistula left to venous drainage through the intercavernous anterior sinus and to ophthalmic vein in the right. The left CCF has been treated with flow-diverter endovascular stent placement to the left internal carotid artery and then closing by spirals MRI-compatible aneurysm and fistula.

FINAL TREATMENT WAS:
According to literature data
Endovascular stent assisted coil treatment has been chose and all symptoms improved at six months and one year follow-up. AEDs therapy has been discontinued.

TREATMENT
• Taking account that these aneurysms carry low rupture any proposed treatment has to have a lower risk of complications.
• However, symptoms, for a mass effect, are progressive.
• Although surgical management is possible, endovascular therapy is the mainstay of modern therapeutic options, especially when a carotid cavernous fistula has been observed, because spontaneous closure of high-flow CCF is rare.
• The treatment of CCAs requires occlusion of the ipsilateral ICA with the risk of stroke, blindness or both (parent artery ligation or endovascular occlusion) or surgical clipping.
• Stent-assisted coiling was initially done using balloon expandable stents and later using self expandable stents to prevent coil herniation into vessel lumen.
• Bilateral CCAs are extremely rare and no guideline management exist. Traumatic pseudoaneurysms have a higher risk of rupture because of the absence of a true wall and always require treatment.

DISCUSSION AND CONCLUSION
• According to literature and our experience, this is an unusual clinic presentation for aneurysms of the cavernous segment of the internal carotid.
• This type of aneurysm could represent a diagnostic challenge for neurologists for atypical clinical presentation.
• Aneurysms of the cavernous segment of the internal carotid and carotid-cavernous fistula CCF need to optimize therapeutic approach.
• Endovascular therapy is the best therapeutic option, according to literature review.

REFERENCES