Originals

Clinico-radiological spectrum of giant supraclinoid internal carotid artery aneurysms

Observations in 93 cases

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Summary. A review of a series of 312 giant intracranial aneurysms treated at University Hospital in London, Ontario, showed that 93 of those aneurysms were located between the intracavernous portion and the bifurcation of the internal carotid artery. Sixty-five of those aneurysms were carotid ophthalmic, 12 were located in the internal carotid-posterior communicating-anterior choroidal artery regions and 16 involved the internal carotid artery bifurcation. For the majority, clinical presentation was related to the mass of the aneurysms and compression of surrounding structures such as the visual pathways, ocular motor cranial nerves, fifth nerve, and hypothalamic-pituitary axis. Fourteen patients presented with subarachnoid hemorrhage. Cerebral angiography, computed tomography and xenon inhalation studies of cerebral blood flow were the tools used to study the morphology of the aneurysm and dynamics of the circle of Willis.

Key words: Cerebral angiography – giant aneurysm – circle of Willis

Aneurysms are classified as giant when their diameter surpasses 25 mms. They comprise approximately 2.5% of all verified aneurysms [1]. The current literature is scarce when looking at the clinical presentation and the angiographic approach to giant aneurysms located in the internal carotid artery above the cavernous portion. Following the classification developed by Guidetti and Pia [5], these aneurysms were classified as:
1. Internal carotid-ophthalmic aneurysms.
2. Internal carotid-posterior communicating-anterior choroidal artery aneurysms.
3. Internal carotid artery bifurcation aneurysms.

The clinical presentation of giant aneurysms with this topography is usually related to the size of the aneurysm and compression of surrounding structures such as the visual pathways, ocular motor cranial nerves, fifth nerve and hypothalamic – pituitary axis. They may also be the source of a subarachnoid hemorrhage in spite of their partial thrombosis and wall calcifications. Drake describes 62 subarachnoid hemorrhages in 174 intracranial giant aneurysms [2]. He reported no significant difference in bleeding tendency between giant aneurysms located in the anterior and posterior circulations.

The surgical direct clipping of the giant aneurysm neck or the method of treatment using the hunterian principle of occlusion of the aneurysm parent artery, requires accurate information as to the aneurysm topography, and morphology. Morphological and dynamic assessment of the circle of Willis is also necessary in those cases in which aneurysm treatment requires occlusion of the parent artery [2–15].

Cerebral angiography with cervical arterial compression to assess the anatomy of the circle of Willis, head computed tomography and xenon inhalation study of the cerebral blood flow are the tools used in our institution to collect the information needed to treat these giant intracranial aneurysms.

Material and methods

A review of 312 giant intracranial aneurysms at University Hospital, London, Ontario, showed that 93 of those aneurysm were located in the internal carotid artery between the cavernous sinus and its bifurcation. Sixty-five giant aneurysms were carotid ophthalmic, 16 were internal carotid artery bifurcation aneurysms and 12 were internal carotid-posterior
Fig. 1 a and b. AP (a) and lateral (b) views of left common carotid arteriogram. Visualization of giant carotid-ophthalmic aneurysm projecting superiorly and medially. Most of the aneurysm is situated in the suprasellar cistern.

Fig. 2 a and b. AP (a) and lateral (b) views of left internal carotid arteriogram. Visualization of giant carotid-ophthalmic aneurysm projecting superiorly and anteriorly.