Perforating vessel

The perforating vessels supply very important regions of the brainstem and diencephalon, as well as the basal ganglia and internal capsule. Some of their micro-anatomical characteristics are still not well known.

It was noticed that the perforators ranged from 0 to 14 in number, with the smallest mean value (1.1) for the diencephalic perforators and the largest one (8.1) for the lenticulostriate artery. The smallest mean diameter (175 µm) was found in the group of the perforators of the anterior communicating artery, whereas the largest one is related to the Recurrent artery of Heubner (668 µm), the diencephalic thalamoperforating vessels (562 µm), the premamillary vessel (489 µm) and the lenticulostriate arteries (469 µm). The perforators most frequently originated from the pial branches of the basilar artery (91.7 %) and of the posterior cerebral artery (59.4 %). The common stems were most often formed by the perforators of the basilar (79.2 %), posterior cerebral (75.0 %) and middle cerebral arteries (40.6 %). Some perforators arose close to or from the terminal divisions, the branching sites or the junctions of the parent arteries, where the saccular aneurysms most often develop. The anastomoses among the perforators were present in a range from 6.3 % to 53.2 %.

The micro-anatomical data obtained may be useful for neurosurgeons when operating at the base of the brain, as well as for a neurological and radiological evaluation of the perforators in the occlusive cerebrovascular disease, or in the cases of an aneurysm, arteriovenous malformation (AVM) or tumour presence [1].

Anterior choroidal artery perforating vessels.

One of the most serious complications of stereotactic biopsy is postoperative symptomatic hemorrhage due to injury to the basal perforating vessels such as the lenticulostriate arteries neighboring the basal ganglia lesions.

1)
Djulejić V, Marinković S, Milić V, Georgievski B, Rašić M, Aksić M, Puškaš L. Common features of the cerebral perforating arteries and their clinical significance. Acta Neurochir (Wien). 2015 May;157(5):743-54. doi: 10.1007/s00701-015-2378-8. Epub 2015 Mar 14. PubMed PMID: 25772345.