Chapter VII

Aneurysms of the Vertebral Artery

The first aneurysm in the posterior fossa successfully operated upon at Walter Reed General Hospital was in 1947. This aneurysm arose from the posterior inferior cerebellar artery. Since that time there have been four intracranial vertebral artery aneurysms. The origin of these aneurysms is often near the site where the vertebral artery passes through the dura. In fact, in two of our patients the aneurysms arose precisely as the vertebral artery passes intrathecally. This necessitates opening the dura to the base of the aneurysm so that the neck can be isolated. These aneurysms sometimes lie beneath the highest denticulate ligament which has to be transected to expose the lesion. These lesions do not have to rupture to cause symptoms. Aneurysms pointing rostrally along the lateral medullary cistern may cause irritative symptoms in the glossopharyngeal nerve (Fig. 79).

Aneurysms of the posterior fossa are diagnosed by vertebral angiography. The subtraction technique is often essential (Fig. 80a and b). In addition to routine half axial and lateral series, a base view (submental-vertex) is often of value.

The posterior fossa is exposed with the patient sitting by using a median incision and a bilateral suboccipital craniectomy (Fig. 81). It is important to remove the arch of the atlas so that the exposure will be low enough. The dura is opened in the shape of a Y (Fig. 4). The arachnoid is opened over the foramen magnum. The cerebellar hemisphere is gently elevated at its junction with the tonsil. Fig. 82 illustrates the area of aneurysm with the arachnoid still intact over most of the exposure. The arachnoidal opening is enlarged toward the lateral gutter. The highest denticulate ligament is identified, transected and reflected (Fig. 83). This permits exposure of the vertebral artery as it enters the dura. The vertebral artery is followed rostrally. The IX, X and XI cranial nerves are encountered as they lie stretched over the aneurysm (Fig. 82). These nerves as well as the posterior inferior cerebellar artery are separated from the aneurysm using a fine nerve hook, mastoid seeker or a variety of aneurysm needles. These instruments are also used to probe and define the size of the neck of the aneurysm. If the neck is broad we prefer to use a 00 oiled silk suture to ligate the aneurysm. In small-necked aneurysms a metallic clip is sometimes easier to apply.

The reader is referred to Vol. I, Chapter II for a more complete description and illustration of the technique of dissection and isolation of berry aneurysms.

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Fig. 79. Anatomico-topographical demonstration of an aneurysm of the left vertebral artery at the origin of the posterior inferior cerebellar artery.

Observe: Relationship of aneurysm to Ns. IX, X, XI.