TUMORS OF THE GASSERIAN GANGLION

TUMOR OF THE LEFT GASSERIAN GANGLION ASSOCIATED WITH ENLARGEMENT OF THE MANDIBULAR NERVE

A REVIEW OF THE LITERATURE AND CASE REPORT

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The trigeminal nerve and its ganglion may be the site of a variety of pathologic lesions. Primary tumors may arise either in the Gasserian ganglion itself or in the root of the trigeminal nerve. Meningiomas, neurofibromas, gliomas, ganglioneuromas, Adamantinomas, gummamas, and metastatic carcinomas are some of the various tumors that have been described. In addition, sarcomas and osteochondromas of the mandible, antrum, nasopharynx or internal ear, have been reported. Aneurysms of the internal carotid artery may also cause symptoms similar to those of tumors. The clinical findings and symptoms that these lesions may produce may make localization of the lesion, whether in the ganglion itself or in the nerve root, relatively simple. On the other hand, it may be impossible at times to determine preoperatively whether the tumor is in the middle or the posterior fossa of the skull, or both.

Sachs, in 1917, writing of tumors of the Gasserian ganglion, mentioned that the earliest case was reported by Dixon in 1846, and one was reported by Günzburg in 1849. Peet, in 1927, found a total of 63 cases in the literature, and referred to a case studied as early as 1836 by R. W. Smith and reported in 1849. Peet described 2 cases of his own in which the tumors had infiltrated the Gasserian ganglion by direct extension through the maxillary division. In his first case the diagnosis was medullary squamous cell carcinoma, without cornification. In the second case, the maxillary division had been infiltrated extracranially by a squamous cell carcinoma of the right antrum. Microscopic examination of the sensory root and posterior portion of the ganglion showed no pathologic change.

Learmonth and Kernohan, in 1930, described a tumor of the Gasserian ganglion said to be similar to neurocytoma of the retina, or similar to schwannomas of the peripheral nerves. Complete removal was not possible. Gradual anesthesia of the entire 5th nerve distribution on the left developed. Preceding each advance of anesthesia, severe transitory pain was present, and paralysis of the left face developed. In the 10 months previous to surgery, 30 corneal ulcers of the left eye had occurred.

Bradley, in 1931, reported a neurocytoma of the Gasserian ganglion, the size of a cherry. The roots entering the ganglion were of normal size.

Cooper, in 1933, reported 3 cases of tumor of the Gasserian ganglion—a schwannoma or sheath neuroma, a neurocytoma, and a fibroblastoma.
The schwannoma was a discrete tumor eroding the petrous portion of the temporal bone. It measured 2X1.5X0.5 cm. Following surgery, there was some defect in hearing on the left, residual pain in the left cheek and mouth, and palsy of the left 7th nerve. Seven weeks after operation there was complete left 5th, 7th, 9th, 10th and 12th nerve palsy, and bilateral involvement of the 8th nerve, more on the left side. The posterior fossa was explored by Dr. F. C. Grant and a tumor, 1 cm. X 5 mm. X 7 mm. in size and situated directly over the foramen lacerum posterius, was removed. It had the same microscopical structure as the tumor removed from the middle fossa.

Cooper\textsuperscript{a} commented that clinical diagnosis is not always possible. Occasionally tic douloureux, atypical neuralgia, postzoster neuralgia, lues, tuberculosis, or an angle tumor may produce a clinical picture that cannot be distinguished from that of early tumor of the Gasserian ganglion. Exploration is justifiable in patients who suffer constant trigeminal pain not satisfactorily explained, and also in patients with objective indications of interruption of the trigeminal motor or sensory pathways without evidence of etiology other than ganglion tumor. Palliative section of the sensory root is justifiable when extirpation of the tumor is not feasible.

In 1932, Dandy\textsuperscript{7} found 18 tumors during 250 cerebellar explorations for trigeminal neuralgia. Unfortunately, he did not classify them. He stated that gross lesions, such as free arterial loops which lifted the sensory root from the brain stem, or venous branches crossing the nerve, were responsible for the trigeminal neuralgic pains in one-third of the cases.

Cohen\textsuperscript{,} in 1933, tabulated all reported primary and secondary tumors of the Gasserian ganglion. Of 81 tumors, 22 were primary and 59 secondary. Thirty-three (and 1 questionable one) were exposed at surgery.

In 1935, Chang\textsuperscript{5} reported the successful removal of a neurofibroma of the Gasserian ganglion. Krayenbühl\textsuperscript{9} in 1936, reported 2 cases, both neurofibromas. In one the patient died following a spinal puncture. Autopsy showed that the tumor arose in the sheath of the 5th nerve behind the ganglion, the bulk of the tumor being in the cerebellopontine angle on the left. The rostral part of the tumor arose in the Gasserian ganglion. He commented that the clinical features closely fitted those of an acoustic neurinoma. His second patient had a 6-year history of headache, sensory disturbance in the right side of the face, staggering, deafness, and mental deterioration. Ventriculography showed bilateral, symmetrical, internal hydrocephalus. No operation was performed. The patient died 2 years later. Autopsy revealed a tumor, 7X4X2.5 cm., in the right cerebellopontine angle; it extended into Meckel's cave and beneath the floor of the 3rd ventricle. At the junction of the pons, the right 5th nerve was separated into two parts by the tumor. At its origin, the nerve was distinct from the tumor but in the distal part it was spread out diffusely and incorporated in the capsule of the tumor.

Krayenbühl\textsuperscript{9} reviewed 54 cases of primary tumor of the Gasserian

\textsuperscript{a} Cooper F. C., J. Neurosurg., 1932, 4, 24.
\textsuperscript{b} Cohen, J. N., Arch. Neurol., 1933, 3, 81.
\textsuperscript{c} Chang, J. N., Arch. Neurol., 1935, 3, 35.
\textsuperscript{d} Krayenbühl, W. W., Arch. Neurol., 1936, 4, 54.