AN ANGIOMA OF THE CEREBELLUM

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The tumor which is illustrated here by the photograph of a section stained according to the method of Van Gieson is an object of some interest because its effect, which was fatal, seemed out of proportion to its size, which was very small, and still more because its histological examination showed it to be of a kind very rarely met with in the cerebellum, where it was found. An inquiry into the literature of the subject furnished a moderate number of reports of cases of circumscribed angioma in the cerebral hemispheres, several of the writers remarking upon the infrequency of such an occurrence. But of a circumscribed angioma of the cerebellum only what looks like a solitary instance was found recorded in a brief abstract of a Russian article, where it is stated that a "hemangioma in the cerebellum" was successfully removed from a girl nine years old.¹

The patient from whom my specimen was obtained was a woman, aged 32 years. About a year and a half before coming under my observation she had had a first attack of pain in the back of the head, which lasted for a short time only. A month later she suffered again in the same way for a few days; and two months after the second attack a third, severe, one occurred. Vomiting did not accompany these headaches. There followed a period of ease which continued until six weeks before I first saw her. Then the occipital headaches recurred: intermittent at first, but persistent for the past month, and, when severe, attended with vomiting and with diplopia. She had taken to her bed three weeks before I became acquainted with her. She is said to have complained of dizziness, but no statement was obtained indicating a disturbance like cerebellar staggering. Buzzing in the left ear was mentioned as having occurred at one time. Of late she would have attacks in which consciousness seemed to be obscured, she could not speak, would perspire freely and turn yellowish. Such attacks would last a few minutes and would be followed by vomiting. In the course of her six weeks' sickness she had been sub-

¹ Journal of the American Medical Association, May 9, 1914.

jected to treatment with iodide of potash, mercury and finally salvarsan.

The patient suffered in the manner described during the week she was under our observation: there were occipital headaches, attacks of altered consciousness and vomiting. She was very emaciated. The optic discs were only very slightly blurred; in fact I was not sure of this and had an oculist examine her repeatedly; he never could convince himself that there was any choking of the disc and considered what he did see as rather indicating a toxic neuroretinitis. There was nystagmus on looking to either side, rather more marked on looking to the right, but none on looking upward or downward. The pupils reacted well to light. The hearing was unaffected; but on account of her frequent vomiting and her apparent prostration Bárány's caloric tests were not made. There were no disturbances of sensibility anywhere until the last day of her life, when it was noted that the sensibility of the right cornea was dulled and from the left no reflex at all was obtained. The cranial nerves were not otherwise affected, nor was the deglutition impaired. The headaches were not felt more in one half of the occiput than in the other, radiographs disclosed nothing abnormal, and careful and repeated testing of the skull elicited no tenderness to percussion or pressure anywhere, the back of the head being most diligently examined in this respect. There was no ataxia of the extremities, no adiadochokinesis, no astereognosis. She seemed too feeble to be taken from her bed and tested as to her gait, but on the morning of the day on which she died she surprised us by the ease and vigor with which she rose from the recumbent into the sitting posture.

The knee-jerks as well as the reflexes of the upper extremities were constantly absent, while the Achilles reflexes could at all times be easily elicited.

On the afternoon of December 10, 1913, the husband had just assented to the proposal to explore the cerebellum when word came from the hospital that the patient was worse, and she soon passed away.

The contents of the cranial cavity having been removed a limited, cyst-like, collection of fluid in the pia-arachnoid drew attention to its site at about the middle of the posterior margin of the left cerebellar hemisphere. A horizontal incision into the cerebellum at this place revealed a dark-red spherical tumor, about the size of a pea. The incision had left the globe intact; part of the little sphere was free, and part seemed embedded in the surrounding tissue. The tumor did not quite reach the surface of the cerebellum, but was a few millimeters beneath it.

The whole tumor with adjacent tissue was excised in one small block. Sections were submitted to Professor Ophüls, the pathologist of Stanford University, who, with accustomed generosity, examined them and sent the following report: "Small tumor of

the cerebellum, about five mm. in largest diameter. The tumor is made up almost altogether of capillary bloodvessels of various sizes. Some of them are narrow and cylindrical, others very large and sinuous. Many of the cylindrical capillaries are in a state of collapse. Little, fairly cellular, loosely constructed fibrous tissue between the bloodvessels. The tumor is intimately connected with the pia mater, well circumscribed. It has caused some destruction in adjoining cerebellar tissue by pressure, but does not extend into brain tissue proper. Angioma of the cerebellum."

FIG. 1

To this may be added that no hemorrhages had occurred in or around the tumor; nor were thromboses or calcified vessels seen. In the center of the sections the vessels are seen to occupy the field more exclusively than at the periphery, where there is more tissue between them, so that one gets the impression of a cavernous structure. But there are not the large spaces filled with blood and separated by walls of connective tissue and lined with endothelium, which constitute the cavernous angioma.

There was no considerable degree of hydrocephalus. Macroscopic and microscopic sections from other parts of great and small brain showed no further lesion. In sections of the meninges, where the fluid had collected, nothing more abnormal was noticed than a slight widening of the space between their layers.

The autopsy could not be extended beyond the skull.

The antecedent occipital headaches of more than a year before may be regarded as premonitory. In the final phase of seven weeks' duration the course did not seem to differ much from what is observed in cases of less uncommon tumor. However, considering the severity and frequency of the headaches and the vomiting and the attacks of altered consciousness together with the loss of knee-jerks which seemed attributable to increased pressure in the cerebro-spinal canal one would have expected more swelling of the optic discs. It was on account of the assumption of a tumor in the posterior fossa with much pressure that we forbore to practise the lumbar puncture, fearing the consequences under such conditions.

Had the operation been performed it is not improbable that the collection of fluid at the site of the angioma would have made the impression of a circumscribed serous meningitis and that the operation would have concluded with the evacuation of the fluid, and the little tumor have been overlooked and allowed to remain. But even from so limited an intervention benefit might have ensued, for the local accumulation of fluid may have been the immediate cause of the suffering and death rather than the tumor itself.

Lacking reports of other cases of tumor of like structure in the cerebellum I can only cite for comparison accounts of circumscribed angiomas which have been observed in the cerebral hemispheres, disregarding the diffuse teleangiectatic tumors of the pia mater. Oliver and Williams² reported the removal of a "simple angioma, rather a rare form of growth apart from sarcoma." There was optic neuritis together with the other common signs of a cerebral tumor. In four other cases, of which two have been described by Astwazaturoff,³ one by Struppler⁴ and one by W. J. Sweasy Powers,⁵ the tumors were cavernous angiomas, three of them situated superficially and connected apparently with the pia, while the fourth, that described by Powers, was well down in the centrum ovale of the frontal lobe and not connected with the pia mater. In none of these is it clear that choked disc was present; in none was a tumor diagnosed. Epileptiform convulsions were

² British Medical Journal, 1898, Vol. 26, p. 1267.

³ Frankfurter Zeitschrift für Pathologie, Bd. 4, and Monatsschrift für Psychiatrie und Neurologie, Vol. 29.

⁴ Münchener. med. Wochenschrift, 1900, p. 1267.

⁵ Zeitschrift für die gesamte Neurologie, 1913, Vol. 16, p. 487.

common to all of them. All the patients were women. Of these Struppler's patient interests us particularly on account of the diminutiveness of the fatal angioma. It is described as being "somewhat larger than a pea," and "hardly the size of a small hazelnut." It was situated at the upper end of the Rolandic region, accordingly remote from respiratory and cardiac centers, differing in this respect from a cerebellar growth. Yet the patient, who had been considered well only a few days before, died after a numerous series of convulsions which had begun locally and later became general. The author was struck, like myself, by the apparent disparity between cause and effect.

From the history of the occurrence of headaches in my patient about a year and a half before the final stage of the disease it may be inferred that the tumor was at least of that long standing; and from its smallness after the lapse of such a period it may be inferred that it had very little, if any, tendency to grow, and that it was capable of producing its evil effects only by congestion, edema or hemorrhage.

Perhaps the angioma was congenital. In connection with this suggestion reference may be made to an interesting article by Oppenheim,⁶ who has seen a number of cases following a peculiar course which he is inclined to ascribe to a congenital "Kavernom" in the brain. A "cavernoma" in the sense in which the term is used by Oppenheim would seem to include all varieties of hemangioma. The coexistence of an angioma of the skin in the patient, or even in a parent of the patient, is held to afford support to the diagnosis. Oppenheim quotes von Bergmann as stating that the "Kavernom" is rare, but he himself thinks that the angioma cerebri cannot be such a rare tumor if the conception of it be broad enough, and that it has surely generally eluded clinical, and perhaps often escaped anatomical, diagnosis. I had not Oppenheim's article in mind while observing the patient, and some little angioma of the skin may not have been observed. I can only say that none was conspicuous. Oppenheim considers it remarkable that in nearly all his cases the patients were males. It appears equally remarkable that in mine and in all the others I have adduced the patients were females.

⁶ Ueber klinische Eigentümlichkeiten kongenitaler Hirngeschwülste, *Neurologisches Centralblatt*, 1913, No. 1