CASE REPORTS

"CENTRAL PAIN" FROM CEREBRAL ARTERIOVENOUS ANEURYSM*

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With the widespread use of cerebral angiography, the diagnosis of cerebral arteriovenous aneurysm is now more common than at any previous time. With increased appreciation of its clinical manifestations, the diagnosis of this formidable cerebral lesion must be considered in any case of a patient with Jacksonian seizures, associated with hemiparesis or hemihypesthesia, in which there has been an episode of subarachnoid bleeding.

The indications for surgical therapy in these lesions have been reported by a number of authors, notably Olivecrona and Riives and Norlén. The possibility of pain in a paretic extremity in association with this lesion has not been reported previously. During his visit to this country, Professor Olivecrona very kindly reviewed the case described in this paper and recommended that it be reported because of its unusual nature.

CASE HISTORY

Mrs. M.L., aged 50, was first seen in neurosurgical consultation at the Fuller Memorial Sanatorium, referred by Dr. L. A. Senseman. She had entered the sanatorium for consideration of intensive psychotherapy, because of unbearable pain in her right upper extremity. At the time that neurosurgical consultation was requested, the possibility was raised of performing prefrontal lobotomy as a method of controlling pain, since her pain had not responded to large doses of analgesic medication nor to various forms of psychotherapy.

The pertinent history appeared to have begun about 10 years previously. At that time, at the age of 40, the patient, who apparently had been in good health, began to suffer from transient "fainting spells." During one of these episodes the period of loss of consciousness was unusually prolonged (2 hours) and when she recovered she was noted to have a complete right hemiplegia and a total aphasia. She was hospitalized and seen in neurological consultation. According to the husband, he was told that the "blood clot was too near the brain and they could not operate." She remained in the hospital for 3 weeks and then slowly recovered and was able to leave the hospital ambulatory. She dragged her right leg, but during her convalescence at home the strength in the right leg improved and she was able to walk with a limp. She had a complete paralysis of the right upper extremity and, in the succeeding months, regained only some motion at the right shoulder. A typical hemiplegic attitude of the right upper extremity developed, with flexion contracture at the elbow, wrist and finger joints. She made slight improvement in her aphasia, and was able to speak in short phrases, but was intelligible only to her husband. She could count up to four, but no further.

With all of these severe handicaps, she made a fair adjustment during the succeeding years, and lived a very sheltered life, keeping house for her husband and seeing only relatives and close friends. Two years prior to admission to the hospital, she began to complain of pain in the paretic right upper extremity. She was seen in medical consultation at this time, and

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it was considered that the pain was related to the developing contracture of the joints of her right upper extremity, particularly the joints of the fingers and wrist. A period of physiotherapy was undertaken, with no specific relief in symptoms. The pain occurred in paroxysms and was described to her husband as being “burning” in quality and completely unbearable. She was seen by numerous physicians for this complaint of pain, and all of the customary analgesic medications were tried without success. Finally, commitment to a mental institution was considered and psychotherapy was carried out as well as possible in the face of the existing aphasia and difficulty in comprehension. At this time, neurosurgical consultation was requested.

**Course.** Review of the history aroused some suspicion of a vascular malformation, by virtue of the clear-cut story of a cerebrovascular accident in a young person previously subject to fainting spells. Cerebral angiography was advised and carried out percutaneously under local anesthesia. Radiographs made on June 9, 1951 showed a well demarcated arteriovenous aneurysm of the left parietal region (Fig. 1).

![Fig. 1. Lateral and anteroposterior angiographic films in the late phase, showing circumscribed arteriovenous aneurysm of left parietal cortex.](image)

**Comment.** The question of surgical intervention was debated at great length. It was considered that the possibility of a second rupture of the arteriovenous malformation was relatively remote, in view of the long time-interval since the previous rupture. On the other hand, the steady intensification of her pain was postulated to be in some way related to the cerebral lesion, and the question was considered whether slow expansion of the vascular malformation might not be producing pressure upon the sensory cortex so that her subjective sensation of pain might be in fact a severe painful paresthesia. Upon this basis, surgery was proposed, although excision of the lesion was felt to offer little hope for recovery of motor power or function of speech.

Certainly, it was felt inadvisable to perform any type of psychosurgical procedure in view of the tremendous enlargement of the vascular channels of the left hemisphere. It was finally agreed to perform a cranial exploration.

**Operation.** This was carried out in two stages. In the first stage, a large bone flap was elevated under general anesthesia, and the dura mater was reflected to confirm the adequacy of exposure of the vascular lesion. The dura mater was then closed with interrupted sutures of silk and the bone flap was returned to position.

The second stage was carried out 1 week later under local anesthesia. At this time it was proposed to excise the lesion with careful attention to the function of the speech mechanism before performing ligation or extirpation of any portion of the lesion. With the previous angiogram available, it was possible to determine the main feeding trunks of the angioma, and