SPEECH DISTURBANCES IN ASSOCIATION WITH PARASAGITTAL FRONTAL LESIONS*

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Since the classical descriptions of Broca,5 Pierre Marie,17 Wernicke22 and Dejerine,9 the area of the dominant cerebral hemisphere most intimately associated with the function of speech has been considered to be that part that centers about the lateral portion of the central (Rolandic) sulcus and the adjacent portion of the lateral (Sylvian) sulcus. Bouillaud2,3 had previously stressed a relationship between the frontal lobes and motor speech and Auburtin1 described an experiment on a patient of Cullerier in which light pressure with a spatula on the exposed frontal lobes caused an immediate interruption of speech during interrogation. Because of interest in language disorders associated with lesions of more medially situated areas of the dominant hemisphere, we have assembled data that bear upon this subject.

Parasagittal meningiomas may be associated with language dysfunction of variable degree. In 1879 Magnan16 reported the case of a 61-year-old woman, who, he stated, “was unable to give any account of herself. She pronounced words or monosyllables without connection, and could not name objects. She reflected, tried, became impatient, wept occasionally, but was unsuccessful; but occasionally she hit upon the right name, on which her countenance expanded, and she seemed pleased at her success. She had the irritability, sensibility and mobility of aphasics, generally.” She had a right hemiplegia and “having a cardiac affection so it was natural to suppose embolism and softening of the third frontal convolution on the left side, the insula, corpus striatum and deep parts. On post mortem quite a different affection was actually found.” The calvarium was adherent at the vertex and there was an osseous elevation at the posterior part of the left frontal and anterior part of the parietal bones on the inner side. Reflection of the dura mater disclosed a tumor “inserted in the internal aspect of the dura mater.” The tumor projected into the posterior half of the first two frontal convolutions and the upper two-thirds of the ascending frontal. “Notwithstanding the immediate proximity of the tumor, the cortex of the third frontal had not been softened.” The tumor was composed of considerable connective tissue with fusiform cells in some places, and in others polygonal

cells with one or more nuclei and only traces of connective tissue. The diagnosis was "neuroglia sarcoma" of the frontal lobe.

Elsberg\(^1\) in 1931 stated "Parasagittal meningiomas over the left cerebral hemisphere, even if not large, sometimes produce definite disturbances of speech, either a sensory or motor or mixed type of aphasia... The growths are often not large enough to make direct pressure upon the areas in which the centers of speech are supposed to lie, nor is the intracranial pressure seen at the operating table sufficiently high to permit one to predicate a diachysis in von Monakow's sense."

In the Cushing and Eisenhardt\(^\) monograph on meningiomas, there are noted 7 instances of left parasagittal meningiomas (Cases 16, 25, 28, 30, 36, 37 and 51) occurring in right-handed individuals in association with speech disturbances. A review of the records in these cases, all of which were from Dr. Cushing's service at the Peter Bent Brigham Hospital in Boston, was made and the following pertinent data were abstracted:

**Case 16.** S.S., a woman aged 41, had severe headaches for 3 years with failure of vision, blindness, and weakness of the right arm and leg. She spoke no English and the history was obtained through her husband.

The following notes were made regarding her speech. "Patient apparently has an aphasia of moderate degree, husband stating that patient often uses the wrong words." Dr. Horrax noted "the husband is also very sure that the patient's speech has been affected." A month after admission, the husband observed that the patient's speech had become distinctly poorer and he found great difficulty in understanding her.

Operation was carried out in two stages. At the first, a left temporal bone flap was reflected and at the second session, the area exposed had to be enlarged with rongeurs. A 60 gm. parasagittal meningioma was removed which, from Dr. Cushing's sketches, would locate it in a position straddling the fissure of Rolando at the midline (Fig. 1).

**Case 25.** C.J.T., a 48-year-old lady, complained of paralysis of her right side and inability to talk. For 15 months she had had headache and had become dull mentally. Convulsions involving the right arm and leg had occurred for about 10 months. She became drowsy, cerebrated slowly and her memory failed. She also had much difficulty talking.

She had bilateral papilledema, right hemiparesis and there was no apraxia. "Patient is very slow in all her answers. She knows the month, the day and the date and what hospital she is in. She is able to name all the objects in the room excepting the electric lamp. She could not get the name for that. Also, in general conversation, it is apparent that at times she has great difficulty in finding the right word. She does not mispronounce words or use wrong words." Her husband also noted that "for the past 2 months she has had difficulty in finding the right word at times." He thought that she understood perfectly everything that was said to her.

The tumor measured 8.5 cm. in length and extended fairly well forward of the fissure of Rolando and half of its bulk was anterior to the dividing line between the frontal and central thirds of the longitudinal sinus. The tumor weighed 162 gm. and was removed in a two-stage procedure (Fig. 2).

Toward the end of the operation she kept repeating "I want to" and many attempts were made to supply the blank, asking if she wanted a drink, etc., but