

## HEADACHE—A COMMON SYMPTOM IN THROMBOSIS OF THE INTERNAL CAROTID ARTERY

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**I**NCREASING employment of anticoagulant therapy and direct surgical operation in the treatment of thrombosis of the internal carotid artery has stimulated interest in the clinical recognition of the condition. Visual disturbances (field defects, blurring of vision, scotomata and amblyopia of the eye on the affected side), aphasia, hemiparesis or monoplegia, sensory disturbances of the arm or legs, psychiatric symptoms, convulsions (often the jacksonian type) and headaches are the common manifestations.<sup>1-7</sup> Three clinical types of onset occur: in one group the onset is sudden and the symptoms are severe (usually hemiparesis); episodic symptoms occur in a second group, symptoms often being absent between attacks; in a third group the symptoms are slowly progressive, resembling the manifestations of an intracranial neoplasm.

Our records of 56 cases of thrombosis involving the internal carotid arteries have been reviewed. All diagnoses were confirmed by arteriograms, and operative proof was secured in all 24 of the patients who underwent surgical procedures. In 35 patients, episodic symptoms occurred; in 14 patients the symptoms were sudden and severe; and in 7 patients the symptoms were slowly progressive. *Table 1* shows the initial symptoms, the incidence of single symptoms, and the frequencies of various symptoms. Multiple symptoms occurred in most patients; some patients had several symptoms simultaneously at the onset of the disease; headache was the commonest initial single symptom. These observations correspond with those reported by others.

Headache occurred in 28 patients, being an initial symptom in 13 patients, in 11 of whom it was the single initial symptom. Headache was almost always unilateral, and always occurred on the side of the arterial involvement. There were no prolonged severe headaches and in no case did the headache antedate neurologic manifestations by a prolonged interval.

Headache was a common manifestation in the 14 patients who had sudden and severe symptoms and in the 35 patients who had episodic symptoms, but it was not manifested in the 7 patients who had the slowly progressive symptoms. The slowly progressive symptoms of thrombosis of the internal carotid artery are most likely to be confused with those of intracranial aneurysm.

In 32 patients, the protein content of the spinal fluid was determined; in 12 patients it exceeded 45 mg. per 100 ml. The protein content ranged between 46 mg. and 120 mg.; being 50 mg. or more in 11 patients, more than 65 mg. in 5 patients, and more than 100 mg. in 2 patients. In each of the patients having a high protein content in the spinal fluid, headache was a symptom. In contrast, headache occurred in only 9 of 19 patients having normal protein content in the

Table 1.—Symptoms in 56 patients who had thrombosis of the internal carotid artery

Symptoms	Total frequency, no. of patients	Initial symptom, no. of patients	Single initial symptom, no. of patients
Hemiparesis	41	14	7
Monoplegia	23	11	6
Arm	(19)	(8)	(3)
Leg	(4)	(3)	(3)
Sensory effects			
Arm	28	11	5
Leg	14	2	2
Aphasia	40	12	4
Visual disturbances	35	6	4
Headache	28	13	11
Mental disturbances	16	—	—
Convulsions	13	—	—

spinal fluid (one of the 32 patients was excluded because there was blood in a tap specimen). There is no obvious explanation for the apparent association of an increase in protein in the cerebrospinal fluid with headache. There seemed to be no association between the severity of clinical manifestations and the occurrence of headache or the occurrence of high protein content in the cerebrospinal fluid.

### Summary

Unilateral headache on the side of arterial involvement is a common manifestation of thrombosis of the internal carotid artery of the sudden or of the episodic type of clinical onset. Headache occurred in half of a series of 56 patients who had thrombosis of the internal carotid artery; it was not present in seven patients of the series who had slowly progressive symptoms. Headache was a symptom in every patient who had a high protein content in the cerebrospinal fluid, an apparent association that is not readily understood.

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