THE SURGICAL TREATMENT OF HEADACHE AND ATYPICAL FACIAL NEURALGIA*

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O LIVER WENDELL HOLMES is reported to have said, "If I wished to show a student the difficulties of medical practice I should give him a headache to treat." Headache is probably the commonest discomfort of man and it has attributes that set it apart from pain that occurs in other parts of the body. Its significance is often disguised and its attending distress is out of proportion to the severity of the underlying cause.

The neurosurgeon asked to rule out intracranial disease in patients with headache is soon made aware of the need of a broad understanding of pain about the head. He must recognize that in the majority of instances there is no serious disease present and he must through clinical evaluation weigh the need for more extensive and upsetting investigations.

Perhaps the neurosurgeon's only responsibility is to recognize and treat those whose head pain can be shown to be a symptom of an intracranial space-occupying lesion, a painful neoplasm about the head or neck, or one of the cranial nerve neuralgias. But there is a temptation often to explore the surgical possibilities for the relief of other head pain. Some surgeons are encouraged in this respect by a desire to help the patient, some wish to investigate physiological and anatomical factors, while others are deterred by a cautious or even a cynical attitude regarding the possible benefits of surgery.

It is my purpose to review the possibilities of surgical treatment of a variety of these head, face and neck pains (exclusive of neuralgias and painful neoplasms) based on others' reports, as well as on my own experience and convictions. Put another way, it might be asked: "Is there a surgical treatment for headache?"

The basic aspects of headache can be listed under two headings: the sensitive structures of the head and neck, and their nerve supply; and the mechanisms that produce pain.

All of the tissues covering the cranium are more or less sensitive to pain, but the vascular and muscular structures about the head, face and neck together with the mucosa of the upper respiratory passages are the source of most of the headache problems.

The intracranial pain-sensitive structures include the arteries at the base of the brain, the dural arteries, parts of the dura mater in the floor of the

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skull, the venous sinuses and their venous tributaries and nerves possessing pain afferents, namely, the 5th, 7th, 9th and 10th cranial and the first two or three cervical nerves.

The common mechanisms of pain are related to traction and distention of the blood vessels; inflammation of any of the pain-sensitive structures; pressure on pain afferent nerves, and sustained contraction of muscles about the head and neck.

In prolonged vascular headache edema occurring in and about the walls of small vessels causes considerable reduction in pain threshold of these tissues. Likewise in sustained muscle contraction local metabolic changes take place that result in tender areas. Not infrequently vascular and muscular headache exist simultaneously.

**HEADACHE AND DISEASES OF THE EYES AND UPPER RESPIRATORY STRUCTURES**

It is relatively uncommon for headache to result directly from diseases of the eyes and upper respiratory structures. While inflammation of the mucosa of the nose and paranasal sinuses may result in a mild form of pain in the local regions of the head and face, much of the headache attributed to diseases of these structures is caused by secondary sustained contracture of muscles of the head and neck. Similar principles obtain in headache associated with diseases of the eyes and of their intra- and extra-ocular muscle functions.

**MIGRAINE AND OTHER VASCULAR HEADACHES**

Dilatation and distention of the arteries inside and outside the cranium give rise to numerous sensory experiences but the interest of the patient and physician is usually directed to the pain that occurs. The location, duration and intensity of the pain vary widely from person to person and in the same individual at different times. The term migraine is reserved by some for a special pattern of headache and associated phenomena, but the line of distinction with other vascular headaches is arbitrary and unimportant.

The detailed studies of migraine leave no doubt that the extracranial branches of the carotid arteries are involved principally. In addition, it seems likely that the meningeal arteries, principally the middle meningeal, take part in the production of the pain, but the intradural vessels seem to play little if any role in this type of headache. It is a common observation that obliteration of the lumen of the offending superficial arteries and even of the carotids in the neck by local pressure will give temporary relief.

Both Cushing and Gordon Holmes remarked on the benefits sometimes observed in migraine patients after subtemporal decompression. Explanation seems to lie in the fact that in the operation both the temporal and middle meningeal arteries are usually divided. Dickerson in 1933 reported the relief of migraine in some subjects by deliberate ligation of the middle meningeal artery.