

## **DISEASES AND DEFORMITIES OF THE NOSE VERSUS NEURALGIA OF THE HEAD.\***

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I have long been impressed with the importance of a more restricted use of many words denoting symptoms, which through common usage have assumed the role of disease classification.

Among these, there is perhaps no word which has been more misused than that of "Neuralgia."

We all know how common is the practice of diagnosing all kinds of diseases about the head which cause pain, as neuralgia, and prescribing some favorite analgesic to relieve the symptoms without due regard for diagnosing the underlying cause and directing the remedies at the disease instead of attacking the symptoms.

Though my purpose may not be well expressed in the title of this paper, I shall endeavor to point out the fact, that when all the head pains or neuralgias occurring as a result of diseases and deformities in the nose and its accessory sinuses are accounted for, there will be but few to attribute to other causes.

Gould's definition of neuralgia is: "Severe paroxysmal pain along the course of a nerve and not associated with demonstrable structural changes in the nerve."

The word has also been used to indicate conditions in which such pain exists as a pure neuroses, to distinguish it from the cases in which inflammatory and degenerative changes are present in the nerve, to which class the name of neuritis is applied.

Pain may be regarded as a reaction of the organism, in part or as a whole, to harmful influences, giving a warning in consciousness that some activity prejudicial to the health of the tissues is operative.

Biologists say that the movements of expansion and contraction of protoplasm are primordial expressions of the pleasure and pain sense; expanding to pleasure giving, and contracting to pain giving or harmful impulses. Hence, any agency in the system which through pressure, chemical or other irritation, causes undue contraction of the nerve protoplasm, tends to cause pain.

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Sensations of pain are conveyed to the brain centers through the afferent, or sensory nerves and the pain is referred to the origin of the nerve fiber whether the irritant is applied to the periphery or to any part of the nerve in its course to the brain.

The trigeminus is the great sensory nerve of the head and face, and through its ramifications are conveyed to the brain all manifestations of common sensation in health; and the sensations of pain, expressed in enuralgia, when its protoplasmic elements are disturbed by disease of the surrounding tissues.

A knowledge of the origin and distribution of this nerve is imperative for a proper understanding of the various obscure reflex pains associated with diseases in the head.

In view of these facts, I make no apology for a brief review of the anatomy of the sensory branches of the fifth nerve.

It is the largest of the cranial nerves and takes its superficial origin in the Pons Varolii nearer to the upper than the lower border. It consists of about one hundred bundles of fibers, which have their deep origin from a nucleus in the pons just below the floor (internal), to the margin of the upper half of the floor of the fourth ventricle.

From its superficial origin it runs forward through an oval opening in the dura on the superior border of the petrous portion of the temporal bone to its apex, where it merges into the Gasserian ganglion, which latter is lodged in an oval depression at the apex of the petrous bone in the middle fossa. This ganglion receives filaments of sympathetic nerves from the carotid plexus and gives off minute branches to the tentorium cerebelli and to the dura mater in the middle fossa of the cranium. From the anterior border of the ganglion are given off the three main branches, viz, the ophthalmic, superior maxillary and inferior maxillary nerves.

The first, or ophthalmic, division supplies the eyeball, the lachrymal gland, the conjunctiva, the mucous lining of the upper and anterior part of the nasal fossa, and the skin of the upper eyelid, tip of the nose, eyebrow, forehead, the muscles, skin and pericranium of the frontal and parietal regions.

The superior maxillary, or second division, emerges from the infraorbital canal and supplies the skin of the lower eyelid, side of the nose and upper lip. In its course, it gives off branches which supply the skin on the cheek, and temporal region and through the dental branches, supplies all the upper teeth, the mucosa of the antrum of Highmore, and through the sphenopalatine ganglion it supplies the mucosa of the soft palate, the gums, roof of the mouth,

nasal septum and the posterior two-thirds of the outer wall of the nose, including the sphenoidal and ethmoidal sinuses. It also sends branches to the tonsillar plexus and upper part of the pharynx. The sensory part of the third division, viz, the inferior maxillary nerve is distributed to the teeth and gums of the lower jaw, lower part of face, the integument of the external ear and temple. It also supplies the tongue with a large branch, the lingual nerve. It will be observed that all these divisions, as well as the Gasserian ganglion itself, give off branches to supply the dura and pericranium of the middle fossa, as well as the tentorium cerebelli.

To recapitulate, the whole area from the lower border of the inferior maxilla, including the face, forehead, frontal and parietal and temporal regions, as well as all the contents of the orbits and nasal cavities; the mouth, and upper part of the pharynx, receive their sensory nerve supply from the fifth pair of cranial nerves. Irritation of any branch of this widely distributed sensory nerve may cause pain referred to any other branch by reflex irritation.

While the *modus operandi* of this phenomenon is not perfectly clear, there is a more or less uniform symptomatology from certain specific causes which bring about these reflexes.

Referring again to the definition of neuralgia, it is difficult to conceive of pain in the course of a nerve as a pure neurosis (whatever that means), without a lesion either in the nerve endings or nerve fibers in their course to the sensorium.

Taking as a basis for discussion the hypothesis that pain sensations are caused by influences which cause contraction of the protoplasm, we may account for many neuralgias, where no demonstrable lesion of the nerves is present.

Some of the predisposing causes of neuralgia are anemia, which acts by impoverishing the nutrient fluid and overcharging it with acid products; the presence in the blood of abnormal substances, as in gout and diabetes; also the products of imperfect metabolism. Such diseases as rheumatism, syphilis, arteriosclerosis and all conditions which interfere with proper nutrition of the nerves, may of themselves cause neuralgia.

To the rhinologist, it is more important to discuss the subject from the standpoint of peripheral infection, especially the irritation which comes from pressure in deformities in the nasal cavities and from pent up pus in the accessory sinuses.

Since pain is the leading symptom for which patients consult the doctor in all these conditions, I can best serve my purpose by describing the character and location of the pain which, according to my observations, are fairly reliable diagnostic aids.

The pain in acute frontal sinusitis, or in the acute exacerbation of chronic inflammation, is described as dull, heavy, throbbing in character and is intensified by body movements which tend to increase congestion, such as stooping forward, or in jarring the body, as by running or jumping. The pain is usually limited to the region of the sinus itself and is greatly increased by pressure over the floor of the sinus at the upper inner angle of the orbit.

One of the most characteristic symptoms of frontal sinus pain is its periodicity; starting usually between nine and eleven o'clock in the morning, reaching its greatest intensity early in the afternoon, and disappearing before 6 p. m. without treatment, only to recur on each succeeding day, until the pathology is relieved by spontaneous evacuation of the pus, or by the aid of the physician.

The pain is often as intense in the congestive stage of an acute frontal sinusitis, before pus has formed, as it is in the later stages when the pain is ascribed to back pressure of pus. In the former case, the pain is probably due to congestion of the mucosa because of vacuum in the sinus resulting from closing of the infundibulum and absorption of the contained air. At any rate, the pain is often relieved and suppuration aborted by applying astringents to the nasal mucosa at the infundibulum, whereby the air passage is re-established.

As before observed, the pain in frontal sinusitis is usually located directly in the region of the sinus, without reflex pains, to the other parts of the head; hence the diagnosis of this disease from the pain alone, when present, is easily made. The same may be said to a limited degree of maxillary sinusitis. There is usually a dull, heavy, boring pain below the orbit which may or may not be increased upon pressure over the canine fossa.

While the pain is usually most pronounced over the antrum on the cheek, it may be entirely absent there and be referred to the supraorbital region or along the backward extension of the superior maxillary nerve which supplies the antrum.

Nevertheless, the pain in maxillary sinusitis is not often misleading nor wholly deferred to distant parts. In this respect the sphenoidal sinuses and posterior ethmoidal cells differ materially from the frontal and maxillary sinuses.

Careful observation and study of pain arising from irritation in the sphenoidal and posterior ethmoidal sinuses has led me to look for and find pathology in these cavities when there was not the slightest suspicion on the part of the patient or his family physician of the location of the disease.

While the pain may be located in the region of the sinuses, it is more often referred to the parietal or occipital regions.

Every rhinologist can recall patients who applied for ear treatments because of pain referred to the middle ear or to the mastoid bone, when upon examination the ears were found perfectly normal and the lesion was found in a diseased sphenoidal or posterior ethmoidal sinus.

The pain from pent up pus in the sphenoidal sinuses and posterior ethmoidal cells is often intense and throbbing or boring in character and it is nearly always referred either to the occipital, mastoid or parietal region of the same side as the involved sinus. In contradistinction to the frontal sinus pains, they are usually more severe at night while the patient is in a reclining position.

I report the following case as typical of a class to which I wish to draw special attention, because of the great frequency with which the real lesion is overlooked and the symptoms attributed to other causes.

Mrs. J. E. S., age 30, mother of three healthy children, came for treatment with a history of having had severe neuralgia in the left side of the head radiating from the base of the middle fossa up to the occipital, parietal and frontal regions of the head for a period of three years with only occasional remissions. This pain had been so severe and long continued that the patient as well as her husband feared insanity would be the result.

She had been to numerous opticians and oculists, who prescribed various lenses and ran through the category of analgesics, with only temporary relief of pain. This patient denied having any trouble in her nose, but was convinced that the cause of her trouble was in her eyes; if not her eyes, then there must be a lesion in the brain.

On first examination, Dec. 5, 1914, I found an error of refraction which was corrected by  $+ .75$  sph. in right, and  $+ .50$  sph. with  $+ .37$  cyl. ax 90 in left. As the patient gave a negative history, I made no examination of her nose at this time, but finding this error of refraction, I contented myself with prescribing the proper correcting lenses in the hope that these would bring the desired relief.

On Feb. 16, 1915, the patient returned, reporting that the headaches continued on the left side as before. At this time careful examination of the nose was made and the nasal septum was found to be deflected to the left high up, causing considerable pressure on the left middle turbinal and its impaction was so great that it wholly obstructed the opening of the sphenoidal sinus. Closer examination revealed some pus in the region of the left sphenoidal sinus opening.

I performed a submucous resection of the nasal septum, removed the impacted middle turbinal, and enlarged the opening of the sphenoidal sinus. This procedure gave prompt relief of the pain for several months.

On October 23, 1915, the patient came back completely discouraged, now having pain on both sides of the head. Up to this time she had never had pain on the right side. She now was suffering from an acute coryza. Upon shrinking the nasal mucosa, it could be seen that the right middle turbinal, which was hypertrophied before the submucous resection was done, had become impacted as a result of moving the septum towards the median line and now there was an acute suppuration in the right sphenoidal sinus as well as an acute exacerbation of the left sphenoidal sinusitis, which condition caused the pain in both sides of the head. At this time the right middle turbinal and also the whole of the anterior walls of both sphenoidal sinuses were removed. After a period of daily treatments extending over several weeks, the pus discharge from both sinuses cleared away and with re-establishment of normal ventilation in these cavities, the pains in the head entirely disappeared and the patient has been perfectly well and happy for the last two years. It required a good deal of will power to convince this patient that her symptoms would not return.

I can give histories of scores of similar cases with equally good results following operation in the nose which had as their main object proper drainage and ventilation of the accessory sinuses.

It is because of the large number of cases of this character which have come under my observation, that I am led to believe, that a very large majority of all these obscure neuralgias (so-called) in the head have their origin in diseases of the accessory sinuses. Exostoses or deflections of the nasal septum, which cause pressure in the region of the posterior ethmoidal cells, often cause similar symptoms. Undue pressure in the region of the anterior ethmoidal cells causes pain between the orbits and in the vertex of the cranium.

The neuralgias arising from disease of the Gasserian ganglion, as expressed in tic douloureux and supraorbital neuralgias, as well as those due to carious teeth, I shall not attempt to discuss, as they are usually easily differentiated from those under discussion.

The diagnosis of diseases of the accessory sinuses is not always easy and can be made only by careful study of the clinical symptoms and physical signs. In recent years the x-ray has been extensively used in diagnosis and, while it gives valuable diagnostic information in many of these cases, I am convinced that many cases of well ad-

vanced disease of these cavities have been overlooked through laying too much stress upon the x-ray findings.

I am more than ever convinced that the court of last report in diagnosis of accessory sinus disease, must be a careful study of clinical symptoms and physical signs.

Every case with obscure head pains should be subjected to critical examination of the nasal cavities before and after blanching their mucosae with adrenalin or cocain, or both.

By this procedure it is easy to ascertain the presence or absence of the most essential elements of a healthy nose, viz: ventilation and drainage.

In the absence of either of these conditions there cannot be a normal functioning in this important organ.

The treatment, therefore, may be summed up in two words, *ventilation and drainage*.

In the presence of these conditions there cannot be pain or neuralgia such as I have described. It is the absence of these conditions that causes untold numbers of victims to exhaust the category of so-called neuralgia and headache cures with only temporary or no relief.

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**Tuberculous Bronchial Glands.** E. SCHMIEGELOW, *Hospitalstidende*, Feb. 6, 1918.

The symptoms of stenosis from compression by enlarged bronchial glands are the difficulty in expiration while inspiration proceeds with comparative ease; the cough which resembles whooping cough and occurs spasmodically; an area of dullness over the interscapular region; the peculiar whistling character of the respiration. With suppuration and perforation into a bronchus the patient may cough up the extruded masses and recover. But if they are too large to be coughed up the child suffocates if operative measures are not applied in time. Direct bronchoscopy is indicated at once and it may be possible to aspirate through the bronchoscope the contents of the gland that have broken through into the bronchus. Tracheoscopy is especially useful in cases developing gradually. For children under six, tracheotomy is indispensable for tracheoscopy.

Ed.