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SYMPOSIUM:

NEUROSES OF THE UPPER AIR TRACT, EXCLUSIVE OF THOSE DUE TO DIPHTHERIA AND ORGANIC DISEASE.*

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Neuroses of the Pharynx..... F. E. HOPKINS, M. D., Springfield.

Neuroses of the Larynx..... EMIL MAYER, M.D., New York.

REFLEX NEUROSES OF NASAL ORIGIN.

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The relation of intranasal disease to certain pathologic conditions of the nervous system has been the subject of careful study and much speculation on the part of the rhinologist for many years, and even a cursory review of the literature would occupy more time than I have at my disposal. That it has long been a subject of interest even outside the realm of any single specialty is shown by the scholarly investigations of John N. MacKenzie, who gives ample proofs of the fact that the fathers in medicine, centuries before the advent of the modern rhinologist, plainly recognized the interdependence of certain nasal and nervous diseases. Neuroses of nasal origin have been divided into two general classes, the sensory and the reflex neuroses. The former class consists chiefly of disturbances of olfaction, anosmia, hyperosmia, and parosmia, and of disturbances of sensation, anæsthesia, hyperæsthesia and paræsthesia.

* Opening the Discussion on this Subject at the 26th Annual Meeting of the American Laryngological Association, at Atlantic City, N. J., June 8, 1904.

Anosmia or absolute loss of smell frequently occurs and it may be due to a variety of causes. Zwaardemaker distinguishes three kinds. The respiratory, the gustatory and the essential. In the respiratory form odoriferous particles are prevented from coming in contact with the mucous membrane of the nose by obstructions in the anterior nares, while in the gustatory form the choanæ are impervious to these particles. Essential anosmia is that form in which the epithelium is affected, or the nerve trunks and bulbs are either diseased or altogether absent.

According to Kundrat congenital anosmia is not very rare. He reports a case of Heshels in which there was an entire absence of the olfactory nerve, and in fact of all the nerves of the nose. The larynx and genital organs were poorly developed and the testicles were as small as beans. These are interesting observations as showing the developmental relation between the nose, larynx and genitalia.

Cases of senile anosmia are of occasional occurrence, and we have also toxic anosmia following the infectious diseases. Influenza and acute coryzas are frequent causes. The introduction of chloroform, ether, cocaine, nasal douches, and even water may affect temporarily the sense of smell. Graves reports a case of permanent anosmia by drawing off a foul pond. This was probably the result of over excitation of the olfactory nerve. The nostrils in some cases seem to become inured to an odor in somewhat the same manner as the auditory nerve grows accustomed to violent excitation. Several cases of traumatic anosmia have also been reported, resulting from gun shot wounds and falls upon the occiput, in which there were fractures of the ethmoid and other bones of the cranium.

Basic tumors of the brain, meningitis and tabes have been mentioned as causes of anosmia, and rheumatism may affect the olfactory nerve. A case of left sided loss of smell with aphasia has also been reported. Hysteria in my experience is frequently associated with recurring attacks of anosmia and agnosia. Absence of smell for certain special things is not an unusual occurrence.

Hyperosmia or a genuine hyperæsthesia of the sense of smell may be a forerunner of anosmia. It is often due to an excessive irritation of the olfactory nerve. Certain toxic substances such as strychnia, and the insufflation of morphia, according to Fröhlich, may cause this disturbance of smell. It occurs with certain odors only, and it is increased in hysteria and neuræsthesia. One patient could not bear the smell of meadows, and another could not read a fresh newspaper because the printers ink caused him to have disagreeable olfactory sensations.

Parosmia or paræsthesia of the sense of smell is of frequent occurrence, and the odor is almost always of a disagreeable character. It may be due to constitutional conditions, such as give rise to digestive disturbances or it may be the result of local conditions such as carious teeth, ozena, or suppurations in the nasal and accessory cavities. Zarnico reports a case in point of a woman who for years had been regarded as a hypochondriac because she complained of an unpleasant odor with no apparent cause, until finally an empyema of the antrum was discovered, the opening of which disclosed large quantities of offensive pus, and the proper treatment of which entirely removed the disagreeable odor. This would seem to emphasize the importance of a careful rhinologic investigation in all cases presenting these symptoms.

Parosmia is occasionally found associated with chronic nasal catarrh; especially of the hypertrophic form, and influenza is also a frequent cause. Onodi reports two cases of physicians having influenza of a severe type and complaining of such odors as pitch, shellac, sulphur and cadavers. Intermittent parosmia is sometimes found in the aged. Parosmia occurs occasionally in tabes, and it is said to be an aura of epilepsy. Curious reflex disorders have accompanied anomalies of olfaction.

Kussmaul in his celebrated book "Disorders of Speech" reports a case of a man, 65 years of age, whose whole life had been devoted to severe intellectual work, and who one day jumped up from his desk exclaiming, "I smell sulphur. I have had a stroke," and thereupon collapsed and from that time on had verbal amnesia. Sander reports cases of epilepsy in which an awful odor preceded and continued throughout the attack, and in which gumatous nodes and nodules were subsequently found in the brain and olfactory nerves. Féré, Binswanger, Growers and others mention cases of epilepsy preceded by olfactory sensations in which no anatomical lesions could be discovered.

Anæsthesia, hyperæsthesia and paræsthesia of the respiratory regions of the nostrils may also exist. This is well illustrated in making local applications to the mucous membrane and in making examinations with the probe. One patient will endure the most drastic measures while another will flinch at the slightest interference. Sneezing, cough and asthmatic breathing are the usual reflex symptoms of hyperæsthesia of the mucous membrane. An example of a paræsthetic condition of the nasal mucous membrane is a sensation of fullness or occlusion which occasionally occurs when the nostrils are perfectly free. Hysteria is usually a concomitant of this condition.

In reference to the second division of my subject, namely, reflex nasal neuroses, I confess that I have always been more or less skeptical, and I have felt that the rhinologist, like his neighbor the ophthalmologist and gynecologist, has found in many instances that which he most desired to find and he has allowed his enthusiasm to carry him rather too far along these interesting lines. However, I have been entirely willing to indulge my colleagues in their speculations, and I have occasionally taken a hand myself because I do not see that any special harm can come from them, and to be quite frank I believe much good has come from them. The operative measures suggested for the relief of nasal reflex neuroses have been of such a character that if they do not cure the disease they will at least add to the comfort and happiness of the patient in other ways and render him less liable to future respiratory troubles of various sorts.

I am of the opinion that the nervous symptoms which occasionally follow operations in the nasal cavities are the result of a faulty technique, such as a lack of the necessary antiseptic precautions, and not a result of the operation itself. In speaking of operations, however, what shall we say of the remarkable report of Alexander Francis of 402 cases of asthma, 346 of which had no nasal disease at all and of these only eight were not benefited by cauterization of the nasal septum (a doubtful expedient it seems to me under any circumstances.) He claimed better results from his nasal treatment of those having no intranasal disease than from those having intranasal disease. Of course there may have been in the mucous membrane of the septum a condition such as B. Lewis reports to have found in the mucous membrane of the lower turbinal of a patient having severe nervous symptoms, namely, a nerve having a proliferation of fibers and situated very near the surface. In one case there were 110 fibers and in another 50, and all the symptoms promptly ceased with the excision of these areas. Another excuse for the cauterization of apparently healthy nasal mucous membrane has been advanced. It is said that if the irritation caused by operative interference within the nasal cavities can be held responsible for reflex disturbances in remote organs, may not a similar irritation be regarded as curative by its revulsive action, and may we not, therefore, use the electric cautery upon the mucous membrane in the same manner as we use a counter irritant upon the skin.

My only untoward nervous symptom in a somewhat large practice of intranasal surgery occurred recently in a case of epilepsy, and I desire to report it in this connection because of its direct bearing upon the general subject. In March of the present year during one of

my clinic hours at St. Mary's Hospital, a well dressed young man was brought to the accident ward by the police patrol with the history of having had a fit on board a trolley car, and the resident immediately brought him to my clinic for nasal examination. I found an irregularly shaped septum with marked pressure in the region of the posterior 3rd of the middle turbinal on the left side and a marked obstructive spur in the anterior portion of the right nostril. In addition, of course, there was present a decided nasal and post-nasal catarrh.

I advised local treatment to be followed by operative measures for the correction of the septal irregularities in the hope of ultimately relieving or curing the epilepsy. The attacks had occurred only about once a year. It was decided to take my advice in the matter and accordingly the treatment was soon after begun. In due course of time I removed a large exostosis of the septum which was pressing firmly against the left middle turbinal. As the patient lived at some distance from any emergency aid I decided to put in a thin piece of the prepared aseptic sponge devised by Dr. W. K. Simpson to prevent the possibility of an annoying hemorrhage. He returned on the second day following the operation and reported having had two slight epileptiform attacks. Upon examining the field of operation I found from the swelling of the sponge and surrounding tissue a considerable more pressure than I had anticipated and I at once removed the packing. There have been no subsequent attacks. I must say that I was rather pleased than otherwise at the fact of the excitation of the attacks, because it seemed to indicate that intranasal pressure might have been a causal factor in the disease and that we might at least hope for a cure by a removal of this pressure.

We are familiar with the so-called "reflex arc." It consists in its simplest form of an afferent sensory nerve, an efferent motor nerve and a ganglionic or cerebrospinal center, controlled to some extent by the higher cortical centers of the brain. The afferent nerve carries the impulse to the central station, from which it may be reflected to any part of the body having efferent connection. The reflex may be regarded as physiologic when the entire circuit, including its cerebral connection is in good repair, and it is pathologic when the circuit or any part of it is not in good repair. Moreover, the impulse may begin in the terminal filaments of the afferent nerve constituting what is known as a peripheral impulse, or it may begin in the cerebral cortex and thus become a central impulse. A draught of cold air on the back of the neck followed by sneezing is an example of the former, and the act of blushing attendant upon a confusion of ideas serves as an illustration of an impulse of central origin.

From the foregoing it appears that a pathologic reflex always presupposes one of two things; either a disturbance in some portion of the reflex arc or some unusual peripheral irritation. A disturbance in the reflex arc renders the nervous system as we say "unstable" while it is quite possible, that a peripheral irritation within the nostrils or elsewhere may be the origin of a pathologic reflex act we must keep in mind the fact that sooner or later we have to deal with an unstable nervous system.

The reflex neuroses that are of undoubted nasal origin, and that seem to rest upon a firm theoretic basis, are sneezing, cough, spasm of the glottis and asthma, and the nerves through which the impulses pass in these neuroses are the anterior ethmoidal, and the posterior nasal branch of the 2nd division, and a branch of the dental nerve of the 3rd division of the trigeminus. Sneezing as it ordinarily occurs is probably a physiologic reflex and serves as a means of expelling extraneous irritating particles from the nostrils and probably also as a warning in case of sudden exposure to draughts of air. It may, however, become pathologic when any portion of the arc through which the impulse passes becomes overwrought or hypersensitive. This reflex may be produced in many instances from any portion of the nasal mucous membrane, but there are generally points of special susceptibility, which points in my experience are by no means uniformly fixed as to location, but they vary in different individuals. Moreover, the sneezing reflex may be extranasal in its origin, as for instance, that which comes from a ray of bright light suddenly striking the eye, in which case the impulse is transmitted from the ciliary through the nasal to the ethmoidal nerve, and pressure upon superficial portions of the latter will often prevent the sneezing. Irritation of certain portions of the scalp will also sometimes produce paroxysms of sneezing.

The two most important and distressing symptoms of intranasal irritation are, in my experience, cough and asthma, and I mention them together because they are closely allied both anatomically and etiologically. Francois Frank has shown experimentally that nasal irritation will produce spasm of the glottis and bronchi, but as Friedrich has aptly suggested in order to be quite sure of our diagnosis we must have absolute clinical proof that the symptoms can only come from the nasal mucous membrane, that they can be completely arrested by anæsthesia of the parts, and that they can only be finally cured by direct treatment of the offending area. We all of us doubtless have had cases of cough and asthma that have given these three clinical proofs of diagnosis. I have one under observation at the present time, and another which offers some difficulties

of diagnosis because it is complicated with albuminuria. I am still in doubt whether the asthma is a reflex of the nasal or the renal disease, or whether both the asthma and renal disease may not be reflex symptoms of the nasal irritation. That the latter is a possible solution of the case is suggested by the fact that the nasal disease preceded both the other conditions and its amelioration by local treatment is promptly followed by fewer attacks and less albuminuria.

Closely related to nasal cough and asthma we must mention spasm of the glottis. That this affection may be of nasal origin has been shown experimentally, and proofs of the fact are not wanting in clinical practice. An adult patient of my own, for example, will invariably produce an inspiratory crowing sound upon the application of a probe to certain portions of the nasal mucous membrane. The impulse in these cases is probably transmitted directly through the sphenopalatin nerves to the medulla, and thence reflected backward through the vagus to the respiratory muscles. This probably also explains certain phonatory disturbances that often occur reflexly in connection with nasal diseases.

Farquer Matheson claims that stammering in early life is due in most cases to diseases of the nasal cavities and he reports several cases in which the removal of adenoids completely cured the stammering. After referring to the neurotic temperament of stammerers he concludes that one of the following conditions is a constant factor, namely hypertrophied turbinals, adenoids and chronic rhinitis. I am almost prepared to endorse these statements, for a careful study of upwards of 1,000 cases of all forms of defects of speech has led me to conclude that the neurotic temperament is a constant factor, and that 98% of all cases have some form of intranasal disease. Notwithstanding these facts it must be admitted that we have few positive indications that defects of speech are due to intranasal disease. Matheson reports several cases cured by the removal of adenoids, and I myself have reported a case in which a severe form of stammering never recurred after the removal of one of these growths, but I confess I could not be sure that the operation cured the stammering. Indeed I am of the opinion that it did not and could not, for the disorder was of several years' duration and even if the adenoid growth had been the original cause of the stammering, some years previously, the stammering had now become a nerve habit, and the removal of the growth, although necessary to a cure, should scarcely be regarded as sufficient. What I have said of course does not preclude the possibility and even the probability that intranasal disease is a cause of stammering and other forms of defective speech. Indeed, I incline strongly to this view,

but to be quite sure of our ground in reference to the etiology of this affection, as is the case also to some extent with cough, asthma, chorea or any other neurosis, we must get hold of our case before the disease has become a nerve habit, or before certain complications arise which tend to perpetuate it even after the original cause has been removed.

In my case a vigorous campaign against the stammering habit was being carried on before and after the operation, and this was probably a greater factor in the cure than was the operation itself. My own opinion, however, is that the adenoid was probably one of the causes of the stammering and that its removal was a necessary factor in the successful treatment of the case. Of all the stammerers that I have seen I can recall but one or two that were brought to me at the very inception of the trouble. The old belief so common among the laity, and even among certain physicians themselves, that children "grow out" of these nervous affections is responsible for much neglect and unnecessary suffering.

That hay-fever is a neurosis, and that it has its origin in the nasal cavities, at least in some cases, have come to be fairly well established facts, but that the morbid condition within the nostrils is only one of a series of causal factors in the disease is also well understood. The neurotic habit, the psychic expectancy and a certain irritating material in the atmosphere must be reckoned among the causal factors.

Orbital neuralgias are common in connection with nasal and accessory sinus disease, but the close proximity of these organs may account for the pain in the acute cases. Aural disturbances are also frequently reflected from the nasal cavities. I had a somewhat painful proof of this fact some years ago in my own person. A unilateral intranasal pressure caused, among other things, distressing sensations in the ear of the affected side and they were occasionally attended by slight vertigo, all of which symptoms were promptly and permanently corrected by the removal of a septal spur. Several similar cases occurring in my own practice have convinced me that vertigo should be classed among the possible nasal neuroses.

Although cases of epilepsy and chorea have been reported as cured by nasal surgery I am not prepared to class them among the nasal neuroses. That the choreic twitchings of the muscles of the face and eyes in neurotic children are reflex conditions arising from nasal irritation I have many times proven to my own satisfaction.

The reflex influence of nasal irritation is often manifested in disturbances of respiratory rhythm. This is well illustrated in examinations of the mucous membrane with a probe and in making

topical applications. We ask our patients to breathe rhythmically but they find it quite impossible to do so. Francois Frank has reported asphyxia in animals by cauterization of the nasal mucous membrane. Retardation of the pulse, cardiac arrhythmia and even syncope may result from reflex nasal irritation. Every rhinologist has observed these symptoms attendant upon minor operations within the nose. We sometimes attribute it to cocaine poisoning, or to psychic influences, but I am inclined to think that it is generally a reflex manifestation of the operation itself. W. H. Good and W. G. B. Harland have recently reported cases of "Apnoea and Cardiac Inhibition in Operations of the Respiratory Tract."

Vasomotor disturbances both in the nose itself and in distant organs follow irritation of the sensory nerves of the nose. Vasomotor coryza, hydrorrhea and possibly also hay fever may be explained on this theory.

It is not always possible to draw the line between certain reflex nasal neuroses and those due to imperfect oxidation of the blood through faulty respiration. As Jacoby has pointed out, nasal occlusion, whether partial or complete, may result in an accumulation of carbonic acid gas in the brain and especially in the respiratory centers of the medulla and thus produce neuroses of a grave character. Moreover, the intimate relation which exists between the lymphatic system of the nasal mucous membrane and those of the dura mater and the arachnoid space makes it possible that direct cerebral infection may take place through these channels, and in this way Guye of Amsterdam has explained that complex of mental symptoms which he so aptly calls aprosexia. In a recent paper I reported a case of stammering in an aprosexic youth of 15 having empyema of both antra, and his condition seemed best explained by the theory of cerebral absorption of toxic material through the lymph channels.