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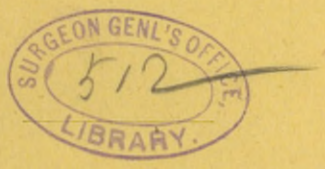

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A CASE OF TORTICOLLIS FOLLOWING REMOVAL OF ADENOIDS OF THE RHINO-PHARYNX, WITH REMARKS ON NASAL REFLEXES.[1]

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IT seems almost necessary to apologize for again referring to a topic so threadbare as that of nasal reflexes. My excuse for so doing is the recent occurrence in my own experience of an instance of reflex disturbance which I believe to be rather uncommon and of unusual interest. In these days of rhinological enthusiasm we should not be surprised to find that almost every possible functional derangement has been at one time or another attributed to an intra-nasal lesion. After sifting out the genuine cases from those which are the product of illogical inference, we have a list of considerable length, containing certain examples which are easily recognized, and are of frequent occurrence. Among these may be mentioned bronchial asthma associated with nasal polypi. Yet we shall probably find it difficult to follow certain modern observers to their conclusion, that all or even a large proportion of cases of asthma are due to some deformity or disease of the nasal fossæ. As an illustration of the extreme to which the human mind may be led in pursuit of a theory, witness some of the extraordinary cases quoted by Hack in his well-known papers on nasal reflexes. Gastralgia and dyspepsia, cardiac palpitation, salivation, scotoma, agoraphobia, exophthalmic goitre are among those enumerated. Other observers have reported cases of chorea and epilepsy, of nocturnal enuresis, and of neurasthenia, one writer asserting of the last mentioned disease, that he has not seen a single case of it without co-existing catarrhal trouble. This last statement loses a little of its startling character in view of the pre-

[1] Read before the Neurological Section ot the Academy of Medicine, February 16, 1894.

valence of catarrhal disease in this climate. A case of glaucoma, not relieved by iridectomy, is reported to have been cured by removal of a nasal polyp, and rheumatic muscular pains are said to be not infrequently dependent upon nasal disorders. Thus far the present popular "fad"—appendicitis—has, I believe, escaped the soft impeachment. While intra-nasal lesions have been accused of promoting all sorts of disorder, the rhino-pharynx has not been altogether exempt from suspicion, and the number of authentic cases of rhino-pharyngeal reflex has become quite large.

Cases of hysterical aphonia, in which the voice was promptly restored by cauterization of the posterior ends of the inferior turbinated bodies, have frequently occurred in my own experience and in that of others, and may, perhaps, be included in this category, since in its enlarged condition, the end of the inferior turbinated is an occupant of the upper pharynx. It must, however, be admitted that in cases of this class almost any profound impression upon the nervous system would be likely to accomplish a similar result. A more appropriate example of true rhino-pharyngeal reflex is to be found in a case like that reported by Casselberry, (*Trans. Am. Laryngol. Ass'n.*, Vol. xv, 1893, p. 9), of laryngeal spasm excited by the application of a strong spray to the vault of the pharynx of a girl, fifteen years old, with enlarged faucial and pharyngeal tonsils. On a subsequent occasion, the passage of a probe into the rhino-pharynx induced a spasm so violent and prolonged that unconsciousness supervened, and tracheotomy was contemplated. A curious fact in connection with this case is that removal of the adenoids was effected under cocaine without apparently producing a spasm.

According to Bosworth, adenoids in the vault of the pharynx may become, "in rare cases," a source of reflex symptoms, and, in a paper on "Chorea minor from naso-pharyngeal reflex," (*Am. Jour. Med. Sci.*, April, 1886, p. 517), Jacobi gives a graphic picture of lymphoid hypertrophy in the vault of the pharynx as an exciting cause of various muscular anomalies.

Tornwaldt, of Danzig, in his well-known thesis on the "Bursa pharyngea," refers to reflex cough as a symptom of hypersecretion or of cystic degeneration of the bursa. In his monograph on "Hyperplasia of the pharyngeal tonsil," Trautmann, of Berlin, gives especial attention to the reflex symptoms associated with this condition, of which he cites numerous interesting examples. Several cases of reflex cough have been reported by Hering, of Warsaw, (*Rev. mens. de larynologie*, April, 1886. p. 177). In

one of these torticollis and painful spasm of the muscles of the neck succeeded immediately upon electric cauterization of the pharyngeal wall. The muscular disturbance persisted for nine days, and ceased only with the cicatrization of the wounds. A neuritis resulting from irritation of a nerve filament in the neighborhood of a cauterized point is thought to have provoked the reflex phenomena. It should be noticed that in this case the traumatism was inflicted upon the pharyngeal wall rather than in the vault of the pharynx. A case of spasm of the glottis with dyspnœa from chronic pharyngitis, reported by De Gennaro, (*Arch. Ital de Laringol.*, An. vi, f. 3 and 4), suggests a possible frequent relationship between adenoids and laryngismus in children. A similar observation has been made by Ragoneau and by Coupard. I have myself operated upon a little girl, the child of a physician, who was subject to frequent and alarming attacks of glottic spasm, especially when excited. Since the adenotomy, more than two years ago, there have been only two attacks, and those were of moderate severity. In his elaborate paper on the "Hysterogenic zones of the upper air passages," Lichtwitz, (*Rev. mens. de laryngol.*, Dec., 1886) refers to a case in which the posterior surface of the velum was the seat of what he calls a "lethargogenic zone." He gives records in all of six cases exhibiting an interesting variety of reflex phenomena. Three remarkable cases have been reported by Netchaieff, of Moscow, (*Abstr. in Jour. of Laryngol., etc.*, March, 1889). In one, the right middle turbinated was enlarged, and a papilloma the size of a cherry stone, lay between the left Eustachian orifice and the choana! The patient had aphasic symptoms followed by numbness, pricking and spasmodic twitchings of the right hand and right side of face. All disappeared when the morbid conditions in the nose and rhino-pharynx had been remedied. The second case was one of œsophagismus, associated with dyspnœa, in which the right inferior turbinated was hypertrophied, and the corresponding half of the posterior wall of the pharynx was thickened. Relief followed the use of the galvano-cautery. Both of these cases were adult males. In the third case, that of a lady, subject to attacks of dyspnœa, palpitation, headache and giddiness, a cure resulted from two applications of chromic acid to an enlarged right inferior turbinated. In a paper read before the Am. Laryngological Association in 1889, (*Trans. Am. Laryngol. Ass'n.*, Vol. xli, p. 43), J. N. Mackenzie expresses the opinion that the nasal pharynx, in quite a large pro-

portion of individuals, is exceedingly sensitive to reflex-producing stimulation and that the areas chiefly involved are the posterior ends of the turbinated bodies, and the upper and posterior portions of the cavity. Not to detain you with numerous references to the literature of the subject, suffice it to say that all authorities who take any notice of the matter concur in the opinion that adenoid hypertrophies in the vault of the pharynx may be the exciting cause of reflex disturbances in the larynx and elsewhere. I may add that a pretty thorough search has failed to discover on record a case precisely identical with the one about to be narrated, and it is the first of its kind occurring in my own observation. But few writers on this subject refer to such a complication as a possibility.

The following case came to my clinic at the Manhattan Eye and Ear Hospital in the Spring of 1893, giving a typical history of adenoids in the rhino-pharynx and presenting the characteristic physiognomy.

The case will be reported in detail by Dr. McKernon in the forthcoming volume of Transactions of the Hospital:

The patient was a girl, aged 9, who had been a mouth breather ever since a course of measles, eighteen months before.

She had had frequent attacks of earache and the hearing was decidedly impaired. She was assigned to Dr. McKernon for operation, but the patient disappeared and did not come again to the clinic until last October. At that time her general condition was very bad, but the nasal occlusion was so complete that immediate operation was felt to be imperative. Accordingly she was etherized and three scrapings were done with the Gottstein curette, the first two, of the vault, and the last, of the posterior wall of the pharynx. It is quite certain that no unusual force was exerted. No difficulty was met with in the manipulations, and only an average amount of blood was lost.

Twenty hours after the operation, it was noticed that the patient carried her head with the face turned towards the right shoulder, and it was found that she was unable to move it back.

Forced rotation and flexion of the head were painless, but extension was painful, and a sensitive point was discovered just to the left of the cervical vertebrae. There was no perceptible rigidity of the superficial muscles at the back of the neck, and the anterior cervical muscles were quite flaccid. There was only trifling rise of temperature, but the child looked sick, refused to eat, and was restless at night. She did not complain of spontaneous pain or discomfort in swallowing. The appearance of the pharynx forty-eight hours after operation was peculiar. The mouth being open, the lower limit of the wound, made by the curette, could readily be seen considerably below the plane of the velum. The surface of the wound was foul and sloughy. Its margins were angry and swollen, particularly below and to the right, where there appeared to be a mass of partially everted mucous membrane of lymphoid tissue. During the succeeding twenty-four hours improvement began. In the course of ten days the rigidity of the head, and the traces of the pharyngeal operation disappeared.

In the meantime the transformation in the general appearanc of the child was remarkable. She gained in flesh, and improved in color. Her previous heavy, stupid expression of countenance was replaced by one of brightness and intelligence. Her breathing, hitherto labored and snoring, especially at night, was tranquil, and in speech there was very noticeable increase of vocal resonance. In short, an unhealthy and rather dull child had been converted into one of more than ordinary vigor and attractiveness by the simple process of restoring the nasal respiratory track to its normal condition.

The early post-operative symptoms in the foregoing case were somewhat perplexing, but it gradually became clear that we had to deal with a simple condition of tonic muscular spasm.

The clinical study of reflex neuroses is always attended by more or less difficulty. For example, a case of asthma of fifteen years duration is now under my care, who had very aggravated chronic rhino-pharyngitis and chronic lacunar tonsilitis, the right tonsil being especially large and diseased. This patient was given hydriodic acid internally, and a detergent antiseptic spray for the nose and pharynx. In addition, the tonsil has been partially destroyed with the electric cautery. For the first time in many years she is now getting undisturbed sleep at night. and has had no asthma for several weeks, but up to the present moment I am equally uncertain as to the cause of her asthma and the source of her relief. To further illustrate the confusion to which we are liable, let me refer to a case reported by Harrison Allen of what he calls "paresis of the suspensory apparatus of the hyoid bone of the tongue," in a victim of adenoid hypertrophy and enlarged faucial tonsils, in which the familiar phenomenon of labored and interrupted respiration during sleep is described (*Trans. Am. Laryngol. Ass'n.*, 1886, p. 4). This child had recently suffered from a severe attack of whooping cough which may have had some bearing upon the suffocative attacks. In discussing Dr. Allen's paper, Hooper related a case of chorea developing about two weeks after removal of adenoids under ether, in a child of marked neurotic tendency. The length of the interval may be thought to exclude the idea of an etiological relationship between the operation and the neurotic development.

In order to appreciate more readily the ease with which lesions and pathological conditions of the rhino-pharynx may become the exciting cause of reflex disturbance, let us recall, very briefly, a few points in the anatomical structure and relations of this cavity.

The wall of the pharynx is composed of mucous membrane, a layer of submucous fibrous tissue and various muscles. Its vault is formed by the body of the sphenoid bone and the basilar process of the occipital bone, to which are attached aponeuroses and ten-

dons of several muscles which enter into the construction of the pharyngeal wall and control certain movements of the head. From the pharyngeal spine, midway between the foramen magnum and the anterior margin of the basilar process, spring a few tendinous fibers of the superior constrictor muscle. Just to the outer side of the spine is attached the rectus capitis anticus major muscle, and directly behind it, the rectus minor. The former muscle arises from the tubercles of the transverse processes of the third to the sixth cervical vertebrae inclusive; the latter from the anterior surface of the lateral mass of the atlas and its transverse process. The recti muscles are flexors and rotators of the head. Their nerve supply is derived from the suboccipital and deep internal branches of the cervical plexus, and they are in close relation with the superior cervical ganglion of the sympathetic. The mucous membrane lining the rhino-pharynx is especially rich in blood vessels and lymphatics, and its nerve supply is thus described by Wendt in Ziemssen's Cyclopedia: "The second division of the trigeminus gives branches to the roof of the pharynx and the parts surrounding the Eustachian orifices. The mucous membrane is also supplied by filaments from the glosso-pharyngeus and the vagus, with which fibers from the sympathetic connect." Speculation as to the precise mechanism of reflex neuroses is perhaps profitless, although we may not be fully inclined to agree with a reviewer of Woakes' book on Nasal Polypus, who writes in the *Journal of Laryngology*, March, 1888, imploring "one undoubted experimental proof that these isolated ganglia (e. g. Meckel's, the superior cervical, etc.), possess afferent and efferent nervous systems, and can become centers of reflex action. There is nothing to support such a contention beyond assumption and assertion, and the mischief of it is that those who write most profusely of the disturbances of the "sympathetic system" (that much abused nervous chain), show the slenderest acquaintance with physiology."

On the other hand it is the belief of Mackenzie (*Trans. Am. Laryngol. Ass'n.*, 1886, p. 154), whose contributions to this subject have been numerous and valuable, that "these affections are intimately related to some disturbance of the sympathetic nerves, and probably a deranged condition of the vaso-motor centers themselves."

There seem to be three ways in which the train of symptoms occurring in this case might have been produced. 1. By an actual wound of the rectus muscle. 2. By a contusion of the muscle from extraordinary pressure in curetting. 3. By a lesion of nerve

filaments in the mucous membrane resulting in a reflex irritation of the muscular fibers engaged in rotation of the head.

The first may be at once excluded by the behavior of the wound and by the appearances on completion of repair. The second may be eliminated on the testimony of an experienced and careful operator who disclaims the use of more than ordinary force. One suspicious point in this connection is the localized tenderness to the left of the cervical vertebrae. The third theory seems to give a satisfactory interpretation of the symptoms, especially in view of the evidently neurotic temperament of the patient and the depressed state of the general health. Although the occurrence of torticollis as a sequel of adenotomy is not a very serious matter, it may perhaps be avoided by bearing in mind the fact that as we descend the posterior pharyngeal wall the layer of lymphoid hyperplasia becomes thinner.

We may, therefore, accomplish a radical removal of these so-called vegetations by a relatively superficial use of the forceps or the curette in that situation.

This point also has a bearing upon a method of operating which I have long practiced and recommended in cases in which the lymphoid tissue is found to be distributed at a low level in the pharynx, namely, in ploughing up from below with the nail of the forefinger the adenoid tissue of the posterior wall before the application of instruments.

The use of the finger in this way has a double advantage. We may thus more exactly estimate the degree of force required without going to an excessive depth, and we thereby so accumulate the morbid tissue in the vault of the pharynx as to ensure the extraction of a larger proportion with the first introduction of the forceps.

Finally, although my personal experience is too limited to justify a definite conclusion, the scanty testimony available would seem to indicate that the posterior wall, rather than the vault of the rhino-pharynx, is the site whence these motor disturbances emanate.

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