NASAL REFLEXES.

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There is perhaps no department of modern rhinology more interesting to the specialist or more prolific in material than "nasal reflexes." Indeed, so fertile has been the field that much opprobrium has fallen to our lot by the great diversity of diseases and multiplicity of symptoms which we have attributed to this cause. It does not seem at all strange to the surgeon that *morbus coxarius* should attract our attention by pain in the knee-joint; but he is skeptical when we refer a post-auricular neuralgia to a hypertrophic turbinate. For a thorough understanding of these neuroses we are perhaps more indebted to Hack, of Freiburg, than to any other one man. His monograph¹ on the subject referred to cases of asthma, nightmare, cough, migraine, sneezing, neuralgias, swelling and redness of the skin of the nose, etc., which he had for the most part successfully treated by cauterizing the erectile bodies of the anterior extremities of the lower turbinates.

In 1872 Voltolini² reported a case of reflex asthma due to the irritation caused by a nasal polyp, and cured by the removal of the growth. Since then numerous cases of asthma have been reported as due to nasal disease, and a large per cent. of asthmatics are now cured by the rhinologist. In 1882 Dr. Carl Seiler,³ of Philadelphia, reports two cases of reflex cough arising from intra-nasal lesions. In the same volume of the "Archives" Dr. Wm. H. Daly, of Pittsburgh, reports cases of hay fever as caused by intra-nasal disease. His observations have been corroborated by Dr. Jno. O. Roe, of Rochester, and since by a host of others both in America and abroad. The same year Hack reports⁴ a number of nasal reflexes. The next year John Noland Mackenzie, of Baltimore,⁵ advances the theory that there are in the nose certain sensitive areas, located more especially over the posterior extremities of the inferior and middle turbinates and the adjacent portion of the septum, which, when subjected to disease or irritation, give rise to the so-called nasal reflexes. Dr. Mackenzie's able paper excited no little attention, and while his conclusions have been somewhat modified, yet they served as an excellent means of directing the rhinologist to a more careful examination into this interesting subject. The same year Dr. Elsberg⁶ mentioned many nasal reflexes, some of which appear to be only remotely connected with the local lesion. Baratoux⁷ says that in a certain number of cases cough and sneezing can be caused by irritating the posterior part of the septum, and he attributes certain reflexes to the pressure on this part of the swollen turbinate or a

polyp. Dr. Cartaz⁸ describes an interesting case of epileptoid convulsions produced by touching an ulcer located on the posterior extremity of a hypertrophied lower turbinate.

Hering, of Warsaw,⁹ describes numerous cases of nasal reflexes. He gives prominence to the pressure of the middle turbinate against the septum, or to the irritation of the middle turbinate by inflammation, by inspissated secretions, or by the pressure of a polyp. Mr. Lennox Browne,¹⁰ under the heading of neuroses of the larynx, mentions a case of epileptiform convulsions which he attributes, and I think quite properly, to intra-nasal irritation. Bosworth¹¹ mentions two cases of salivation as due to intra-nasal disease, both in elderly people, and in both cases local treatment was successful.

Gruening,¹² of New York, reports cases of ocular trouble as due to disease of nose, and similar observations have been made by Cheatham, of Louisville,¹³ and by Bettman, of Chicago.¹⁴ Lennox Browne¹⁵ reports a case of glaucoma cured by the removal of a nasal polyp.

These cases and symptoms might be repeated, almost without limit, but I will conclude with two examples of reflex salivation, which have recently fallen under my observation.

Case 1.—Mr. M., æt. 68, musician, nervous temperament, some symptoms of paralysis agitans. Was referred to me July 24, 1890, by Prof. Forchheimer, for obstinate salivation, which had been present since an attack of the "grip" three months before. There was a chronic naso-pharyngitis without marked hypertrophy. The turbinated corpora cavernosa of both nares were engorged and hyperæsthetic, and the pharynx and buccal cavity were filled with an aqueous secretion. The saliva could be seen dripping from Stenson's and Wharton's ducts, and its presence was a serious inconvenience to the patient and of great detriment to his business. The reduction of the local hyperæsthesia was followed by a cessation of the salivary flow.

Case 2.—Mr. N., æt. 51, referred to me by Dr. Ashburn, of Batavia, O., for excessive salivation. He had been subjected to a severe bodily shock five weeks before, since which time his nervous system had been seriously disordered. For four weeks the salivary flow had been so great as to produce marked discomfort. In this case there was present chronic hypertrophy of both lower turbinates, now accompanied by excessive hyperæsthesia. Dr. Ashburn agreed with me in thinking that we had to deal with a reflex salivation from intra-nasal disease, precipitated by the nervous shock lately received. The patient's general condition was so bad that he was unable to undergo any local treatment other than palliative, and I am unable to report the result.

Among the affections which have been attributed to intra-nasal disease or irritation may be

mentioned: asthma; hay fever; cough; spasm of glottis; gastralgia; dyspepsia; tumefaction and redness of nose; cedema of conjunctiva; conjunctivitis; photophobia; epiphora; asthenopia; glaucoma; scotoma; salivation; cardiac palpitation; disorders of smell, taste, hearing and sight; huskiness of voice and aphonia; exophthalmic goitre; rheumatic pains; vertigo; chorea; epilepsy; melancholia; agoraphobia; aprosexia; neurasthenia; migraine; cephalalgia; neuralgias; nocturnal enuresis; many uterine disorders; affections of the genito-urinary mucous membrane, etc. The very number of these reflexes is so great that care must be exercised to prevent mistakes.

Dr. Bosworth has very properly¹⁰ eliminated such of these affections as are probably produced in some other manner than by reflex action. For example, some neuralgias may be caused by pressure on a nerve trunk of engorged tissues and vessels. A conjunctivitis may arise from an extension of inflammation by continuity of tissue through the nasal duct.

As specialists we must carefully examine the nose; but as physicians we must look still further in our search for the often obscure *causæ morbi*. We must not let our zeal as specialists overcome our judgment as physicians.

But the reflex being admitted, and the local origin being some intra-nasal lesion, what, let us inquire, produces the reflex?

Hack seems to believe that the vaso-motor paresis of the anterior turbinates, as a rule, causes the irritation which gives rise to the reflex. John N. Mackenzie thinks that the trouble is due to an implication of the nervous ganglia or nerve centres, and that this involvement may be due to frequent irritation of the intra-nasal nerves or to some other impairment of the nervous system, or to a neurotic dyscrasia plus the local intra-nasal irritation.

There must be a nervous temperament, a diseased condition of the nerve centres, and then a local intra-nasal lesion. Dr. Mackenzie's reasoning on this subject is so logical, and his conclusions so just, that I at least endorse his idea of duality in these neuroses, even if I cannot wholly accept the trinity.

That the first irritation of a previously healthy nose in a person whose nervous centres were normal would produce a reflex disturbance I very much doubt. But when this nerve shock has been experienced repeatedly, then it is easy to believe that there might be some impairment of the nervous ganglia because of their over-stimulation. That this abnormal condition of the central nervous ganglia may be more easily produced in a person of nervous temperament, either hereditary or acquired, I can readily believe; and that it may be produced by extra-nasal causes seems to me also possible.

In Case 2, as related above, the patient gave a

history of chronic rhinitis extending over a long period before any reflex symptoms were noticed. Then came the nervous shock, and from extra-nasal causes there was produced the pathological condition of the central nervous system. Then did the intra-nasal irritation call forth a reflex, and then only because of the abnormal excitability of the central ganglia which had been precipitated by other causes.

The engorgement of the erectile bodies from vaso-motor paresis differs essentially from that of true inflammation.

Dr. W. C. Glasgow, of St. Louis,¹⁷ very clearly directs attention to the swelling of the cavernous bodies in some cases without the ordinary symptoms of an inflammatory process. In these cases he has noticed "great swelling of the cavernous bodies, abnormal paleness of the mucous membrane, and profuse discharge of the limpid fluid." There is not increased redness nor an increased supply of normal blood, as would be the case in congestion or inflammation. This condition of vaso-motor paresis is frequently present in the cases of nasal reflexes; but if it is always present it is sometimes masked by active inflammation, so that we see only the ordinary symptoms of congestion and inflammation.

A mechanical, chemical, or thermal irritant may produce this disturbance of the vaso-motors and the engorgement of the erectile bodies. Every local irritation is conveyed by the afferent nerves to the central ganglia and reflected by the efferent to the point of sensation. The repetition of this irritation beyond a certain point, varying in accordance with the condition of the ganglion cells, produces an over-excitability condition of the central ganglia, so that a less and less amount of peripheral irritation is required to produce reflex phenomena. This nervous irritation may become constant and the accompanying reflex be continuous.

One cannot always be positive that a certain symptom is due to a reflex nasal neurosis. Hack has pointed out a test to determine the reflex character of an affection. This is made by applying cocaine to the erectile bodies of the nose, and when fully anæsthetized the reflex phenomena should be abolished. This, however, has not proven a certain test, as many true nasal neuroses are not much affected by the local use of cocaine. Usually the reflex phenomena can be either excited or exaggerated by touching the sensitive area of the nose with a probe, but this is not always true. There will always remain a certain number of cases in which the phenomena are supposed to be produced by intra-nasal irritation, but where it will require the removal of all nasal abnormalities before a positive diagnosis can be made.

There appears to be but little connection between the severity of the reflex symptoms and

the amount of intra-nasal affection. Very little trouble in the nose may give rise to reflex phenomena of great magnitude, and *vice versa*. This fact has many times led to a mistaken diagnosis, as the nares have been pronounced normal when there was present a sufficient amount of inflammation or irritation to give rise to severe reflex trouble. Nor does it by any means follow, when we have to deal with a cough or a supra-orbital neuralgia in a patient presenting marked hyperæsthesia and disease of the nasal mucosa, that the cough or neuralgia is reflex and produced by the evident intra-nasal lesion. The cough may be due to laryngitis and the neuralgia to malaria, and there may be no connection with the nasal disease. Many a nose has been sprayed and burned and cut, and all in vain, for the relief of a symptom which had no connection with the nose. A hypertrophic turbinate does not always give rise to serious trouble, and it is not always necessary to straighten a crooked septum, or cut off a small cartilaginous septal spur.

Since it is probable that the cause of these reflex phenomena may be found in the nose and in a dyscrasia, it is well to direct our efforts at cure in two directions, viz.: to rid our patient of the intra-nasal disease, and at the same time to give attention to the underlying dyscrasia. However skeptical we may be as to the good effects of drugs, we would hardly dare to treat a patient manifestly a subject of lues without mercury and iodide of potash. And if a patient has a periodical supraorbital neuralgia, with an enlarged spleen and a well-marked cachexia, we would not content ourselves with cauterizing the turbinates, however large and inflamed they might be, but would at the same time administer the bark and arsenic and iron to meet the indications for constitutional medication.

The character of the constitutional dyscrasia will determine the constitutional treatment. Just so of the local treatment. Whether a septal spur is removed by a snare, or saw, or drill, or galvano-cautery, so that in the end it is well removed, makes but little difference. Treat the local disease so as to remove it as rapidly as possible, with as little resulting damage to the intra-nasal mucosa.

In these reflex disturbances it becomes apparent that the specialist should be broad in his ideas, not viewing the whole world through his nasal speculum, or not expecting to see the cause of all bodily ailments reflected in his rhinoscope.

AN EASY AND SIMPLE METHOD OF PREPARING MACROSCOPICAL SPECIMENS OF THE EYE.

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At many of the large clinics both at home and abroad a quantity of valuable pathological material is wasted because there has been no easy or simple way to preserve it. This is particularly true in ophthalmic institutions, where the attendants are not usually experts in pathological technique or are too busy to attend to the details necessary for a proper mounting of a specimen. If it were not that preparations of the diseased eye are often very valuable the excuse "want of time" would be acceptable, but the result of a little time and work in this line is often so gratifying, that I feel justified in calling your attention to the method I pursued in the preparation of this specimen. Perhaps it is unfortunate that in the hardening process much time is consumed which cannot be avoided, but the technique is easy and can be acquired by following closely the method herein advised. When the eye is removed wash it in cold water, wrap it in a piece of paper and freeze it hard by inserting it in a box of cracked ice and salt. It should remain not less than an half hour in the freezing mixture, remove it, and quickly with a sharp knife or flat razor cut off two sections, one should extend from the cornea to the equator of the eye opening the anterior and vitreous chamber but should avoid injuring the lens if possible. It is only necessary to open the anterior chamber in one place so that the hardening fluids may easily pass in, the other section, much larger than the first, should be cut from opposite surface of the eye and should extend from the edge of the cornea to the posterior pole of the eye on a plane corresponding to the horizontal visual plane and parallel to the optic axis. If the eye is well frozen this can be done without crushing the organ or disturbing the relation of the internal structures, but the lower cut must be so even, that when the eye rests upon a flat surface the scleral edge is in contact all round. The object is that being thus placed upon a piece of glass, when the vitreous fluid melts it will be retained within a scleral cup and hold the internal membranes and structures exactly as they were before the eye was opened. Of course it may be necessary to make the openings at other places to avoid cutting away the bases of tumors or certain diseased parts, but

¹ Ueber eine Operative Radical-Behandlung bestimmter Formen von Migraine, Asthma, Heufieber, etc., 1884.

² Die Anwendung der Galvano-Kanistik, Vienna, 1872.

³ Archives of Laryngology, Vol. iii.

⁴ Berliner Klinische Wochenschrift, 1882, No. 25.

⁵ Amer. Jour. of Med. Sciences, July, 1883.

⁶ Transactions A. L. A., 1883.

⁷ Revue Mensuelle de Laryngologie, December, 1885.

⁸ France Médicale, Vol. ii, 1885.

⁹ Annales des Maladies de l'Oreille, du Larynx, etc., 1886.

¹⁰ Diseases of Nose and Throat, p. 487.

¹¹ Diseases of Nose and Throat, Vol. i.

¹² New York Medical Record, 1886.

¹³ Amer. Practitioner and News, 1887.

¹⁴ Jour. of Amer. Med. Assoc., 1887.

¹⁵ Op. cit.

¹⁶ Op. cit.

¹⁷ Trans. A. L. A., 1885.