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CAUTERIZATION OF THE FOUR SUSCEPTIBLE AREAS OF THE NASAL MUCOSA.*

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Recent endeavors to reconstruct the methods of treatment of hay-fever along thoroughly scientific principles have been more successful in theory than in practice. I did not concern myself much with the Dunbar theory, but was especially interested in developing my own clinical data gathered for many years, and thereby happened upon a therapy which produces temporary relief, and for which patients are grateful. This therapy is not only of service in hay-fever, but also in the various forms of reflex neurosis, known to us collectively as a vasomotor rhinitis, a class to which bronchial asthma may also be added.

My basis for procedure is as follows: The mucous membrane of the nose, like all other mucous membranes, may become hyperaesthetic. Such hyperaesthesia may exist without definite manifestation of inflammation. This may easily be detected with the probe, a very convincing yet somewhat crude method of examination; for the hyperaesthesia manifests itself sufficiently in cases where even a much milder irritant, such as dust, causes tickling and a tendency to sneeze. The presence of a hyper-sensitive mucosa may be definitely determined by delicate probing, and by similar probing of the normal mucosa valuable comparative data can easily be gathered.

The hyper-sensitiveness of the nasal mucosa is produced in vasomotor rhinitis by prolonged irritation, sometimes of the mildest form, brought about by changing conditions in the seasons of the

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year, habits and occupation. In most of these cases, the irritation is a mechanical one, due to fine dust particles, or to various pollen which have an additional chemical reaction. A patient may be exposed constantly, or daily at definite periods, to the harmful effect of dust, or, not until he is exposed to the dust upon the street. This irritation produces a varying degree of discomfort in different patients. There are predisposing general and local conditions, where a narrowed lumen of the nares with impaired nasal respiration, and catarrhal conditions, or greater sensitiveness of the mucosa and more pronounced irritability of the nervous system exist, where acquired or hereditary causes must be considered.

It is evident that dust particles which act purely mechanically provoke only slight irritation. Repeated irritations of this character must eventually produce a hyper-sensitiveness. This condition will develop more rapidly when toxins are liberated by the dissolving of these particles, to which the mucosa is especially sensitive. It may happen, however, that such irritating substances are present in gaseous form in the air taken during respiration, so that it is not a mechanical but a distinctly chemical irritation with which we have to deal. It is remarkable that some gaseous substances, as the perfumes of flowers, for example, are irritating to some and not to others. My only explanation for this is that a hyperaesthesia of the nasal mucosa, especially of the olfactory region, has been previously developed. In my further investigation I shall eliminate such cases in which gaseous substances are etiological factors. They belong to a special class because in these the irritation extends over the entire nasal mucosa and even to the mucous membrane of deeper areas of the respiratory tract. It cannot be denied that those areas on which the impurities of the air are first impinged are most infected, even though the influence of pollen is locally and specially active in the olfactory region.

Let us consider only the harmful effects of dust particles. If this effect takes place at all, it must act most violently at the first point of contact and where it is deposited in largest quantities, and distinctly located in the anterior cavities of the nose. Where opportunity affords an examination of a patient who has just worked in dust or soot, we find large deposits anteriorly on the septum, and on the anterior ends of the inferior and middle turbinals. This has been definitely verified experimentally.

The air taken during respiration does not pass directly backwards through the nose in a straight horizontal line, but follows a curve up-

wards, as the current of air passes over the curved floor of the nose in an upward direction. The air is cleansed of its dust particles mainly in the anterior nares. The ciliary activity and increased mucous secretion cannot remove these dust particles with sufficient rapidity to overcome this intense irritation. In this way inflammation may be produced and the tendency to hyperaesthesia increased, especially when these particles act not only mechanically, but also chemically.

The irritation of the deeper nasal mucosa can scarcely be compared with that to which the anterior area of the nose is subjected. To the more intense effect of dust must be added the direct sensation of an irritation in the anterior nares. This is experienced most acutely by patients in whom a hyper-sensitiveness already exists, and in which the effect locally is emphasized. The patient feels distinctly the above mentioned points—that is, the anterior portion of the septum and the anterior end of the lower turbinate; but I am not able to speak with certainty of the middle turbinate. The feeling of discomfort after an intense irritation may increase to a strong tickling sensation, and this is not diffuse, but distinctly localized in two spots, one being lateral, the other medial.

The lateral lies slightly above the region of the anterior end of the middle turbinate; the medial is felt on the upper part of the septum about the tubercle. By probing one can easily prove that just these two spots exhibit the greatest sensitiveness, showing at the same time a most varying degree of sensitiveness and difference in the sensibility of these two localized spots. Sometimes the two points on the one side are more sensitive than on the other; again the medial is more sensitive than the lateral, or vice versa. My experience has been acquired through numerous observations of these conditions.

Patients designate these spots with the greatest precision and call the physician's attention to them; but I am able to speak from personal experience because I have often suffered from vasomotor rhinitis and mild hay-fever. At such times, it was only necessary to pull apart a fragment of cotton. The fine particles of dust caused thereby immediately brought on an attack, which proved how small a mechanical irritation need be to affect a sensitive mucous membrane.

I cannot forego the remark that these sensitive spots are located in the region of the ethmoidal nerve, which supplies the anterior nasal cavities with a medial and lateral branch. This form of hyper-

aesthesia, therefore, is dependent exclusively on an irritation of this branch of the trigeminal nerve.

Hyperaesthesia of the nerve ends of the mucous membrane results in an accentuation of the normal reflexes, tickling and tendency to sneeze and increased secretion, because of the extension of the irritation. The reflex action upon the secretions need not be localized. A slight irritation with the probe in the anterior nares will often produce a localized hyper-secretion, at many points on the mucosa mucous globules appear. Most often, however, this hyper-secretion is diffused along the entire mucosa. This symptom-complex does not depend upon the amount of irritation, but rather on the degree of hyperaesthesia. The slightest irritation can sometimes produce in a highly sensitive mucosa an enormous hyper-secretion, so that the secretion flows copiously from the nose. We deal in this case with a reflex condition of local origin. In cause and effect it is limited to the region of the nose. As it is the ethmoidal nerve which is affected, the reflex curve is in the direction of the first branch of the trigeminus and extends through the medulla oblongata.

The characteristic condition resulting from the oft repeated process of such reflex action we call reflex neurosis. In all so-called cases of vasomotor rhinitis and hay-fever we deal with a local reflex action which occurs most frequently when there is much dust, and which is sometimes prolonged into the colder seasons, where special conditions must be considered.

The irritation originating in the ethmoidal nerve can extend to other nerve areas. Sneezing is an example of this. Here the entire breathing mechanism and above all the vagus nerve is brought into play. In case of vasomotor rhinitis, too, and especially in the milder forms of hay-fever, all possible modifications must be considered. The irritation extends to other branches of the trigeminus, chiefly to those of the eyes, and to the vagus. The question then resolves itself into one of reflex neurosis of nasal origin, and of reflexes widely disseminated from this area.

It seems remarkable that the irritation extending to the vagus should result in a typical manifestation familiar to us as asthma. The relation of bronchial asthma to the nasal cavities, especially in the vasomotor forms of rhinitis, are established beyond doubt by numerous observations. The most convincing proofs are to be found in hay-fever patients suffering from asthma where the attacks vary from the lightest to the severest form.

In other cases of asthma, the local nasal conditions diminish until they are scarcely noticed by the patient. The hyperaesthesia of the nasal mucous membrane and especially of sensitive spots brings us to a proper understanding of the subject. I have observed that in tickling these spots with a probe an attack of asthma or asthmatic symptoms could be produced. I must avoid becoming interested in the confused theme of bronchial asthma, and would emphasize—only to avoid misunderstandings—that asthma and asthmatic conditions may be induced from reflexes other than those of the nose. I wish to consider here only asthma of nasal origin that I, generally speaking, class as a quintus vagus neurosis. Here also the reflex arch may be continued through the medulla oblongata, and it should be emphasized that in these cases a psychic influence is more frequently possible than in localized nasal reflex neurosis.

And now to the treatment of these conditions, which must be a twofold one.

(1) Local treatment: Removal of causes which excite hyperaesthesia of the mucous membrane and elimination of reflexes as well as of predisposing causes within the nose.

(2) General treatment: When the nervous system is to be considered. This we can sometimes accomplish, but incompletely. Dust and similar substances can be avoided to a certain extent, but we can bring about best results through mechanical interference in the internal nose, in conditions of deflected and thickened septum, chronic rhinitis with swelling and hypertrophy of the turbinates, nasal polypi, and accessory sinus affections.

Aside from all this, we must employ a rational therapy to allay a hyperaesthesia of the nasal mucous membrane. Above all else, it is imperative that the above mentioned reflex curve be attacked at an easily accessible point. This is most easily accomplished at the very beginning—that is, on the surface of the hyper-sensitive mucosa, and will be most effective if we accurately reach the above-mentioned irritable points.

This method has been employed before, but was imperfect because the process was only a partial one, and areas were included where no therapy was needed. Thus for a long time the inferior turbinate was cauterized along its entire surface. Spiess called attention to the tubercle of the septum and cauterized it. I was soon convinced that it was necessary to cauterize all points of irritation at one sitting. The cauterization must be carried out on both the medial and lateral points, that is, at four points, and it is best done

with trichloroacetic acid, which is applied on these spots after preliminary cocaineization.

As this reagent diffuses itself very rapidly, it should be applied with a small cotton-tipped applicator, and care used to keep it circumscribed. On each of these four areas a cauterized surface of less than one-half inch diameter suffices.

With such limitation, the results, even when all four points are cauterized at once, are comparatively slight. The patient is directed to remain quiet from one to two days, and in a few days the surfaces are healed.

In the majority of cases results are at once noticeable, while in other cases improvement is delayed until the eschar after cauterization has disappeared.

My experience in a large number of cases has convinced me of the palliative effect in some, and even complete cure in others. The result is seldom permanent, and is only of temporary value, being effective for a period of several weeks. That, however, can extend over an entire hay-fever season. There is no contra-indication to recauterization. By means of this therapy, stubborn cases are often made to yield. This method should not be considered a universal cure, especially not in cases of many years' standing, but it should be given a trial even in such cases.

I feel justified in recommending this technique. In the hands of the skillful and careful rhinologist, this procedure in conjunction with other indicated intranasal medication, will prove of much value to the patient.

39 Friedrichstr.
