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APROSEXIA, CONVULSIONS, AND ADENITIS,

Dependent on Pathological Changes in the Faucial,
Lingual, and Pharyngeal Tonsils.

BY

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APROSEXIA, CONVULSIONS AND ADENITIS, DEPENDENT ON PATHOLOGICAL CHANGES IN THE FAUCIAL, LINGUAL, AND PHARYNGEAL TONSILS.¹

By WALKER DOWNIE, M.B., F.F.P.S.G.,

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OF late years, medical periodical literature has contained numerous articles on post-nasal adenoids and the lingual tonsil, and the average reader, eager for instruction, rather than amusement, must have concluded, after their perusal, that in hypertrophy of the pharyngeal and lingual glands was to be found the primary cause of almost every form of ill-health. Far short of such extremes, however, there are many most important facts associated with the presence of enlargement of the gland-tissue distributed over the pharyngeal wall and the base of the tongue, worthy of the serious consideration of the medical profession generally.

To fully appreciate the significance of many of the pathological changes which occur, and particularly those to be spoken of to-night, as well as the symptoms to which they give rise, it will be of advantage to enquire, in the first place, into the nature and physiological position in the economy of the various tonsils.

Situated between the faucial pillars on each side is an aggregation of compound follicular glands, known to all as *the tonsils*. These from time immemorial have been recognised as structures, which in certain individuals called for the frequent attention of the medical practitioner, though considerable uncertainty existed regarding their function.

In addition to those tonsils there are other collections of gland tissue of very similar structure, situated on the posterior aspect of the tongue, and on the walls and roof of the nasopharynx. The presence of this tonsillar tissue in those localities has long been recognised by anatomists, though physiologists

¹ Read at a meeting of the Medico-Chirurgical Society of Glasgow, 22nd November, 1895.

have said little of it but what was conjectural, and surgeons, until lately, went a step further and ignored it.

The mucosa of the naso-pharynx is infiltrated with diffuse adenoid tissue along with many lymphoid follicles. In the middle line, and near the vault of the pharynx, there is a collection of this lymphoid tissue forming a more or less prominent irregular mass, known as Luschka's or the pharyngeal tonsil.

Again, over that portion of the tongue posterior to the line of the circumvallate papillæ, the region called by Wingrave the "pharyngo glossus," there is a large supply of retiform or lymphoid tissue. This, loosely imbedded in the sub-mucous tissue, is at numerous points collected into dense nodular masses to form follicular glands or lymphoid follicles, the aggregation of which is now frequently referred to as the lingual tonsil.

The part which the faucial tonsils play in the economy has been variously described. Earlier investigators considered that, previous to birth, they lay in contact, and so closed the pharyngeal cavity against the entrance of amniotic fluid: while later physiologists looked upon them as glands for the secretion of fluid to lubricate the bolus of food on its way to the gullet. More careful examination, however, has shown that the tonsils, in a state of health, have a much more important rôle than is implied in either of those statements.

Tonsils are structurally similar to ordinary lymphatic glands, though their covering and immediate surroundings differ from such glands.

An ordinary lymphatic gland is situated in the course of a lymph-stream, and is in free communication with absorbent lymphatic vessels which bring the necessary supplies to the gland for the manufacture of leucocytes, which in turn pass from the gland by an efferent vessel to enter the general circulation.

The faucial tonsils, on the other hand, are superficial and isolated; and though they have no large afferent vessel such as the typical lymphatic gland possesses, there are numerous small lymphatic vessels which gather in the fluids absorbed by the buccal and faucial mucous membrane in the immediate neighbourhood of the tonsils, and these pass into the tonsil and may be considered to take the place of the main vessel of the typical lymphatic gland.

Then, again, although lymphatics communicating with large lymph spaces close by, exist in the neighbourhood of the faucial tonsils, yet no connection has yet been traced between

these lymphatics or the lymph spaces and the tonsils or their follicles. Thus there is no efferent lymphatic vessel to be found, and yet these tonsils undoubtedly manufacture leucocytes. The leucocytes formed here pass out of the tonsils in large numbers, and may be found over the surface or in the crypts. They pass out along with the somewhat viscid tonsillar secretion, a fluid which is endowed with highly amylolytic properties, to mix with and very possibly to aid in the digestion of the bolus and go with it to the stomach.

In connection with this point, it may be interesting to draw attention to the fact that children, in whom in a state of health leucocyte forming glands are most active, are frequently, when the tonsils are hypertrophied, the subject of digestive disturbances, possibly from alterations in the nature of the tonsillar secretion.

Unlike the faucial tonsils, the lingual and pharyngeal tonsils have a free lymphatic connection.

The lymphatics communicating with the gland tissue at the base of the tongue are mainly directed backwards, and after passing through some of the small lingual glands join the deep cervical glands in the neighbourhood of the bifurcation of the common carotid artery.

Again, the lymphatics connected with the covering mucous membrane of, and with the gland tissue in the pharynx, are abundant. Those from the upper part of the cavity are joined by lymphatic vessels from the nose and the superior part of the soft palate, and pass backwards to a gland near the skull between the pharynx and the prevertebral muscles. The lymphatics from the lower part of the pharynx pass out with the superior laryngeal lymphatic vessels, and enter the glands about the bifurcation of the common carotid artery.

The first important point in which those structures differ from each other, is that the faucial tonsils have no direct communication with the general lymphatic system, while the pharyngeal and lingual tonsils have a very distinct, and in the case of the latter, a very free lymphatic connection.

The importance of this anatomical difference is great, and is manifested in the consequences following absorption of irritant or poisonous materials.

In health some of the products of salivary digestion, as well as excessive buccal, nasal, and pharyngeal secretions, are absorbed by these compound glands. What the faucial tonsils absorb they absorb for their own purposes, and should poisonous products be taken up they rarely go further, but

are here destroyed. Thus, in addition to their leucocyte forming function, the faucial tonsils may be looked upon as destructors of material inimical to the well-being of the organism.

What is absorbed by the pharyngeal and the lingual gland-tissue passes readily into the general lymph stream; and should the fluids absorbed contain any products of decomposition or other poisonous material, or germs of disease, these are apt to be passed on *via* the lymph stream to the nearest lymphatic glands.

Hypertrophy of those gland structures is the pathological condition most frequently brought to our notice, but while hypertrophy of the faucial and pharyngeal tonsils is commonly met with in children, hypertrophy of the lingual tonsil is rare in children. The latter usually occurs in young adult life when the pharyngeal tonsil is beginning to undergo spontaneous degeneration. The primary symptoms associated with hypertrophy of the faucial, pharyngeal, and lingual tonsils are for the most part dependent on obstruction, and may be summed up as interference with respiration; difficulties in deglutition; impairment of hearing; and changes in speech; all of which are well known to, and have been observed by every doctor here.

Other secondary changes follow in time, those most widely known being imperfect development of the chest; absence of facial expression, or the features assuming a cast denoting stupidity, and impaired cerebration.

To-night I wish to speak in detail of the latter (impaired cerebration), as well as of certain reflex phenomena and of adenitis, which may occur as the result of pathological changes in the gland tissue under consideration, and which have not always that attention paid to them which their importance deserves.

APROSEXIA.

Guye, of Amsterdam, first called attention to the impairment of the cerebral function due to disorders of the nose and nasopharynx. He found that headache was frequently the result of nasal obstruction, and next in frequency from the same cause was the inability to fix the attention on any definite more or less abstract subject. This latter condition or symptom he called aprosexia. His explanation of this cerebral symptom of exhaustion as resulting from nasal disorders is as follows:—"Cerebral exhaustion must be the consequence of one of two causes, either the nutrient matter which has to

repair the loss produced by the function of the brain is not yet sufficiently procured or assimilated, or the products of the 'tissue-change' which have to be eliminated, are incompletely removed. This removal will, according to physiological principles, have to take place partly at least by means of the lymph vessels; and in this respect we must point to the fact found by Axel-Key and Retzius, that large lymph vessels leave the cerebral cavity together with the fibres of the olfactory nerve. It is highly probable that structural changes in the nasal mucous membrane, and especially such as will exert pressure on the lymphatics, will impair or prevent the current of the cerebral lymph through the nasal mucous membrane. The retention of the products of the chemical processes in the tissues of the brain will lead to results which we may expect to be the same as those of physiological exhaustion, that is, of fatigue."

I have already alluded to the vacant appearance of the face in those the subjects of post-nasal adenoids, who are of necessity "mouth-breathers," but in addition to the look of stupidity which they wear, the children are usually stupid and backward in everything calling for mental effort, and aprosexia is a marked feature in most cases. Ferrier says that intelligence is proportionate to the development of attention, and it is also proportionate to the development of the frontal lobes. The frontal lobes are imperfectly developed in idiots, whose power of attention is very weak; and removal of the frontal lobes does not induce motor paralysis, but merely mental degeneration resulting in loss of attention. Now, anything interfering with the due nourishment of the frontal lobes will interfere with their function, and Guye's theory regarding the mechanical obstruction to the exit of waste material from the frontal region of the brain may, as it is the simplest, be the true explanation. Where, however, this mechanical obstruction, causing lymph-stasis, has existed for years, would we not expect organic changes in the brain to result? Reasoning from symptoms we must conclude that this does not occur, for almost immediately after the complete removal of post-nasal adenoids, even in cases of some years' standing, aprosexia becomes a thing of the past. In illustration of this important fact, one of Dr. Guye's own cases, the first in his original communication, may be quoted. "On examination I found complete nasal obstruction, and the boy, who had been to school for a year, had not been able to learn more than the first three letters of the alphabet. I removed a mass of adenoid tumours from the naso-pharyngeal cavity,

and when his father brought him again, a week later, he told me that his son had learned the whole alphabet in that week."

During a recent conversation on this subject, Dr. Fraser of Paisley directed my attention to a psychologist's explanation of the mouth-breather's inability to fix his attention, referring me specially to Ribot's monograph on the "Psychology of Attention." The general mechanism of attention is motory, and in the particular case of voluntary attention it chiefly consists of an action of inhibition. Everyone knows by experience that voluntary attention is always accompanied by a feeling of effort, which bears a direct proportion to the duration of the state and the difficulty of maintaining it. If this feeling of effort be carefully analysed, it will be found that it coincides with a fixation of the muscles of the chest, a closure of the glottis, and an active contraction of the muscles of respiration. During voluntary attention, which is a momentary state of the mind, respiration is suppressed or inhibited. Where, however, respiratory difficulties are present, the ability to fix the attention is difficult or impossible, according to the degree of obstruction, because there is not that reserve of air in the lungs, necessary for purposes of the economy, to permit of a period of inhibition or short cessation of the respiratory act. The removal of the post-nasal obstruction, by permitting of free respiration, renders the inhibitory action, necessary to voluntary attention, possible.

Much more might be said from the psychologist's standpoint, but if I have made clear the mechanism of voluntary attention, and how it becomes impossible when the nares are obstructed, I have said enough. Guye's theory is that which is generally accepted, but if interference with the lymphatic circulation was wholly responsible for this symptom, it should, reasoning from the results of lymph-stasis seen elsewhere, result in organic changes, which, as has been said, do not appear to occur even in cases of long standing. From the rapidity with which the power to give attention returns after the respiratory tract has been made free, I am inclined to consider the psychological explanation as the more important.

CONVULSIVE SEIZURES.

During the past twelve months I have seen, with some of my colleagues at the Western Infirmary and the Royal Hospital for Sick Children, in all ten children the subjects of epileptiform seizures, each of whom had hypertrophy of the pharyngeal tonsil, with, in some of the cases, hypertrophy of

the lingual tonsil as well. Their ages ranged from nine to fourteen years, they all had become subject to the attacks within a few months only of their appearance at Hospital, and in the majority of cases the attacks occurred at night. There is not time to permit of details being given to-night, but I may say that of four cases operated upon, one has had no seizure since—now an interval of some months; another has had one seizure only within two months, while formerly she had several each week. Of the other two who were quite recently operated upon, one now breathes quietly and easily during sleep, and the mother thinks the fits are less frequent and of shorter duration, and the fourth has not reported herself since operation.

The mechanism of an epileptic seizure was described by Marshall Hall as consisting of two processes. There is the excitation of a sensory nerve, or direct central excitation, which gives rise *first* to reflex spasm of the muscles of the neck causing compression of the cervical veins with consequent comatose symptoms, and *secondly* to a reflex tonic spasm of the muscles of the larynx closing the rima glottides (laryngismus), and causing asphyxia with consequent convulsions. In other words, the condition of unconsciousness is ascribed to venous engorgement, and the convulsions to general asphyxia. Kussmaul and Tenner, however, in their investigations concerning the pathology of epilepsy, showed that occlusion of the larynx alone is capable of producing coma and convulsions, and consequently they refuse to accept the first portion of Marshall Hall's theory.

Quite recently I had an interesting demonstration of this mechanism—a convulsive seizure caused by a sudden obstruction of the wind-pipe. The patient was a child, 3 years old, on whom I had performed thyrotomy for the removal of numerous papillomatous growths some time previously. On the occasion in question, chloroform was being administered by Dr. Hay, House Surgeon, Royal Hospital for Sick Children, preparatory to the withdrawal of the tube and closure of the wound in the larynx and trachea. The tube had been removed, the child was fairly deeply under chloroform, when respiration ceased, his lips gradually became livid, the eyeballs turned upwards, the head turned in a jerky fashion towards the left, the muscles of the face and limbs became rigid (tonic spasm), and appearances pointed to the imminence of general convulsions. The tracheal tube was then reintroduced. Immediately on its introduction, a quantity of tough mucus, which had very thoroughly blocked the trachea, was expelled,

and the twitchings of the head and rigidity of the muscles at once ceased, and the lividity quickly disappeared.

Now, Sir B. W. Richardson, in the *Asclepiad* (1887), refers to a case closely allied to those under discussion, the recounting of which may assist in making clear the contention that the epileptiform seizure in several such cases is the result of new growths in the pharyngo-nasal space. The patient, a lady, was the subject of epileptic attacks caused by a large mucous polypus in the post-nasal space, the removal of which terminated the seizures. It had given rise to none of the usual signs of obstruction, and had been wholly overlooked by the medical gentlemen consulted by the patient. She stated that the seizures were preceded by something dropping into the larynx, resulting in a feeling of something having gone down the wrong way. This was, no doubt, fluid exuding from the polypus dropping into the larynx, the foreign intrusion giving rise to spasm and asphyxia.

Where the naso-pharynx is occupied by hypertrophied gland tissue, the secretion is excessive, and is frequently retained in considerable quantities in the post-nasal space, from which it may suddenly escape on change of position of the patient. In its descent it might readily produce spasm of the larynx, and this would be more readily followed by general convulsions in a child so affected, than in one whose upper respiratory tract is free, on account of the constant inefficient æration of the blood in the former.

A graphic description of the seizure and the method of its relief was given to me by the mother of one of those cases, a child, aged ten, under the care of Dr. R. M. Buchanan. Within a few minutes, she said, of the child putting her head on the pillow at night, she has a seizure, the symptoms of which are stiffening and stretching of arms and legs, slight twitching of the head, which gradually becomes bent forwards, accompanied by a gradually increasing lividity of the face. The child fears to go to bed on account of those seizures, and yet, if anyone is near, the attack may be checked by pouring some cold water into her mouth. As soon as the cold water enters the mouth she takes a long inspiration and she awakes—the spasm of the glottis apparently being overcome by the stimulus of the cold so applied.

Where the lingual tonsil is hypertrophied, and lies, as it frequently does, in contact with the anterior aspect of the epiglottis—"imprisonment of the epiglottis"—the liability to such seizures is, I think, increased.

ADENITIS.

And, lastly, I desire to draw your attention to-night to the association of enlarged glands in the neck with pathological changes in the gland tissue in the buccal and pharyngeal cavities.

As a result of my own experience, I would assert that hypertrophy of the faucial, lingual, and pharyngeal tonsils may exist, and may be so pronounced as to give rise to those symptoms dependent on obstruction in the upper respiratory tract, without any neighbouring glands being affected. But, on the other hand, where there is enlargement of the sub-maxillary and cervical glands in children and in young adults, distinct swelling of the tonsillar tissue in the naso-pharynx and at the base of the tongue will be found in the majority.

From the former of these statements we may reason that hypertrophy *per se* does not necessarily cause swelling of the associated lymphatic glands. But hypertrophy predisposes to conditions which lead up to inflammation of the lymphatic glands communicating with these regions. The surface of the hypertrophied tissue is rough and irregular, presenting pits and prominences, and these surface irregularities favour the retention of particles of food and buccal and nasal secretions, along with foreign substances and numerous micro-organisms, in the neighbourhood of highly absorbent tissue by which these deleterious materials are readily taken up and passed on to the nearest lymphatic glands.

From the description I gave of the isolated position of the faucial tonsils, you will readily believe me when I say that we rarely, if ever, have enlargement of the neighbouring lymphatic glands dependent on affections of those tonsils. The faucial tonsils may be highly inflamed, they may have been inoculated with septic material, or they may be the site of malignant disease (primary) for a considerable time without there being any affection of the cervical or submaxillary glands as a consequence.

Absorption from the base of the tongue, on the other hand, takes place most readily; and if the material absorbed is contaminated with irritants or pathogenic micro-organisms, their absorption is manifested by enlargement of the glands near the bifurcation of the carotid. Inflammation of the dorsum of the tongue, such as may follow on the prick of a fish bone, or which may result from the presence of irritating or decomposing materials lodged in the hollows on the dorsum, is quickly followed by inflammation of those glands; and the

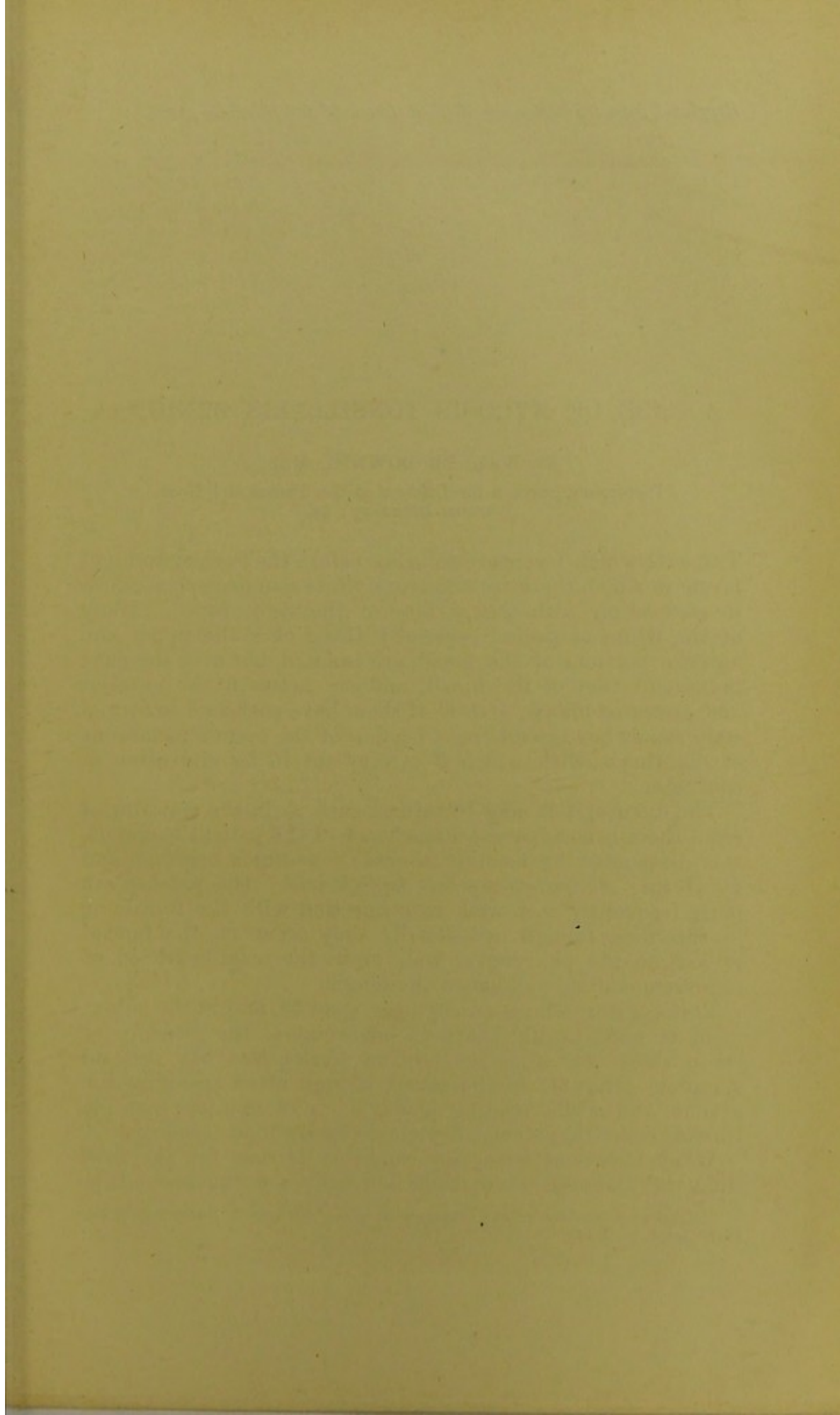
remote results in each case will depend largely on the nature of the material absorbed.

The gland tissue in the naso-pharyngeal cavity occupies an intermediate position, absorption of foreign matters taking place much less readily from this surface than from the surface of the tongue. In great part, this might be explained by position—the pharyngeal gland tissue being less exposed to contact with materials introduced from without; and the pharyngeal surface being on the perpendicular, substances when present, and which, if retained on the surface, might be absorbed to the detriment of the lymphatic glands, have not here the facilities for lodgment presented over the surface of the pharyngo-glossus.

Tubercular affections of the tongue, the fauces, and the pharynx are comparatively rare, and yet the tubercular bacillus, dust borne or otherwise introduced, may be found on the surface of those parts in many individuals. Further, in a not inconsiderable number of cases, as has been reported by several observers, and recently by Dr. Nicoll, tubercle bacilli may be found imbedded in the substance of the adenoid tissue, where neither macroscopically nor microscopically could other evidences of tubercular disease be detected. The absorbent gland tissue, over the tongue and in the naso-pharynx, in the performance of its normal function may take up such micro-organisms; and in this way tubercular affections of the lymphatic glands in communication with these regions may occur in those who, as far as can be ascertained, are free from inherited tubercular tendencies, as well as in those of “scrofulous diathesis.”

In all cases where the glands in the neck are enlarged, whether the swellings are painful or otherwise (acute or chronic enlargement), the condition of that part of the tongue posterior to the line of the circumvallate papillæ should be specially observed, and if any condition exists, favouring the retention of secretions or foreign material, it should be as far as possible removed and the surface made healthy. When roughness due to increase in the bulk of the lingual tonsil exists there will also, in all probability, be hypertrophy of the naso-pharyngeal adenoid tissue making its presence known particularly, by interference with nasal respiration, or by implicating hearing. But whether those grosser symptoms be present or not, this tissue should be thoroughly removed as soon as its presence is detected.

The tongue should in all those cases be so treated as to render its surface clean, firm, and healthy; and the naso-pharynx, so that a perfectly smooth surface will result.



A CASE OF MYCOSIS TONSILLARIS BENIGNA.¹

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THE case which I venture to bring before the Society to-night is one in which there are numerous white rounded excrescences in connection with the surface of the right tonsil. Many of the white tubercles, especially those over the upper and anterior portions of the tonsil, are isolated, but over the most prominent part of the tonsil, midway between the anterior and posterior pillars, several of them have coalesced to form a strip somewhat resembling a portion of the pseudo-membrane of diphtheria, with which it is very apt to be, and often is, confused.

The disease, if it may be termed such, as in the majority of cases there is no apparent disturbance of the patient's comfort, was designated by Fränkel *Mycosis tonsillaris benigna*, and by Hering *Pharyngo-mycosis leptothricia*. The patches are most frequently met with in connection with the tonsils, as in this case, though occasionally they occur on the faucial pillars, on the pharyngeal wall, or in the neighbourhood of the circumvallate papillæ on the tongue.

This patient, who is an engineer, aged 53, and in the enjoyment of good health, has been cognisant of the presence of those spots for at least eighteen weeks, yet has had no symptom referable to the tonsil, though after speaking for a time, and while reading aloud, he is of opinion that his throat generally, becomes dry more readily than formerly.

When a patient with this condition is seen for the first time, the diagnosis then made is usually a wrong one. It is

¹ Read at a meeting of the Glasgow Medico-Chirurgical Society held on 12th October, 1894.