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A STUDY OF THE LINGUAL TONSIL.

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Stoerck, in 1877, was the first to call attention to the mass of lymphoid tissue at the base of the tongue as a factor in the production of irritation of the epiglottis. But only during the last few years has any definite study of the pathology of the lingual tonsil been made. The literature on the subject, with but few exceptions, consisted mostly of reports of isolated cases. That this portion of the oro-pharynx is the cause of many otherwise inexplainable pathological phenomena is not to be doubted, if its examination with the laryngoscope is made part of the routine study of all cases suffering from naso-pharyngeal diseases, and especially if cough is a factor in the history of the patient.

As is well known, the pharynx is surrounded by a ring, or zone, of lymphoid tissue, hardly visible in some positions, and yet in other parts forming quite prominent agglutinations of lymphoid tissue as the faucial tonsils. This ring of lymphoid tissue is continued over the posterior pharyngeal wall, where, in the median line, well up in the naso-pharynx, it again becomes prominent, and is commonly designated as Luschka's tonsil. The anterior portion of this lymphoid circle, situated between the base of the tongue and the epiglottis or epiglottic folds, forms the so-called fourth or lingual tonsil. This tonsil is from one-eighth to one-quarter inch in thickness and is irregularly flat in shape, consisting of a collection of lymphadenoid tissue on either side of the median raphe of the tongue, and situated immediately posterior to the circumvalate papillæ. The base upon which the glands rest is composed of muscular tissue, fasicula from which penetrate into the substance of the gland and interlace between the crypts. It is especially prominent at the sides of the median line, but normally so small that a clear space exists between the tongue and the epiglottis. In the median line the follicles composing the tonsil are so minute as to be practically invisible.

The histology is the same as the tonsilar tissue in other portions of the pharynx, differing from the faucial tonsils only in the smaller number of crypts present. Harrison Allen* has defined a tonsil as

*Harrison Allen, *American Journal of Medical Sciences*, January, 1892.

essentially an association of diverticulæ, developing from the epithelial layer of the mucous membrane. In the wall structure of these diverticulæ are grouped mucous glands and lymph follicles. The stomata of these diverticulæ open, in a more or less uniform manner, on the surface of the tonsilar mass. This description is applicable to all the tonsilar tissue. The lingual tonsil differs only inasmuch as the anatomic units, or in other words the individual crypts, are not bound together in one mass, as in the faucial tonsil; they are single, forming a group of aggregated lymphoid elements with a definite interspace between the individual glands. Microscopically we find from four to eight small lymphoid glands, with a few mucous glands bound together by connective tissue. The crypts are irregularly shaped like the bowl of a lamp.* The blood supply of this region is very profuse, in some instances almost resembling erectile tissue. The lymphatic vessels are also abundant.

Of the physiology of the gland little is known, but from its position and anatomy it seems to be of more or less value in three ways, (*a*) acting as a pad or cushion to fill out the space between the tongue and epiglottic folds, to prevent food from lodging here; (*b*) to secrete mucus to lubricate this region, and thus assist in the passage of the food bolus over the epiglottis; and finally (*c*) by its secretions constantly moistening the circumvallate papillæ, thereby aiding in the sense of taste. That the functions here named are actual facts is not proven any more than we know definitely of the functions of any part of the tonsilar tissue. The lingual tonsil is not, in my experience, present in young children. Usually developing much later than the faucial tonsils, it seems to be rarely present before the fifth or sixth year.

This mass of lymphoid tissue is frequently the seat of some morbid process; from its position and surroundings this must be expected. The food passing over it may produce irritation or infection; lying in a hollow, as it does, particles of food may remain and act as foreign bodies, with the usual results. Irritation may also result from constant motion of the tongue; or inflammation, simple or specific, may spread by continuity or contiguity, and involve it, both from the faucial tonsils and pharynx, or tongue. Frequently simple inflammation of the faucial tonsil will, in a few days from the onset, be followed by inflammation of the lingual tonsil. That diphtheria may involve this mass of tissue seems probable, but I have found no cases reported in the literature at my command, and am not prepared to say conclusively that I have seen it; but a case of pharyngeal diphtheria extending to

*Swain, *New York Medical Journal*, July 25th, 1896.

the larynx, seen several years ago, very probably presented involvement of the lingual tonsil, as the epiglottis, in part, and a small portion of the base of the tongue, was covered with the membrane, cultures from which showed the Klebs-Loeffler bacillus. The lingual tonsil may be diseased, while other portions of the oro-pharyngeal lymphadenoid tissue are normal, or vice versa. That this occurs is well shown in a case seen by Schaede* in which the faucial tonsils and pharynx were the seat of atrophy, while the lingual tonsil was normal.

Diathetic conditions frequently localize themselves in the lingual tonsil, as syphilis,† and rheumatism may manifest itself in this locality, as seen in one case, in which the faucial and lingual tonsils were violently inflamed (twice going on to suppuration) just preceding the rheumatic attack of the joints. The ætiology may be dismissed in a few lines, as it differs in no essentials from that of the faucial tonsils, certain factors seemingly being more potent in the production of diseased conditions of the former than in the latter. It seems to be the general concensus of opinion that the lingual tonsil is affected more often in females than in the opposite sex. Such has been the case in my patients, the female sex predominating. As to the influence of age, as before said, the lingual tonsil is not present until about the fifth or sixth year. After this period of life, in contradistinction to lymphatic glandular hypertrophy being most common in children, diseases of the lingual tonsil are seen after the age of puberty, there being an increased tendency to its inflammation during adult life. For this reason, as a general rule, it may be said that it bears little or no relation to the production of adenoid growths in the pharyngeal vault. In my cases the tonsil was diseased most frequently between the ages of ten and twenty.

In the simple hypertrophic form a nervous or anæmic condition of the patient is generally present. Lewis‡ has lately called attention to the lingual tonsil as a factor in the production of varied pressure sensations when goitre was present in the same individual, and advises an examination of this tonsil when the symptoms are out of proportion to the thyroid enlargement. The causes of syphilitic infection of the lingual tonsil are, usually: excessive smoking, abuse of alcohol, and long-continued speaking or use of the voice in those who have recently contracted syphilis. Before describing the various morbid processes by which this tonsil may become affected, it will be well to name the more

*Schaede, *Berl. klin. Wochenschr.*, No. 13, 1891.

†James E. Newcomb, *Medical News*, July 2nd, 1892.

‡Edwin R. Lewis, LARYNGOSCOPE, Vol. I, No. I.

important symptoms characteristic of disease in this locality in a general way, leaving the symptomatology of the special morbid conditions under the appropriate disease in question.

The symptom, complex, may be divided into three parts: local, constitutional and reflex. The local symptoms may again be subdivided into subjective and objective; the subjective symptoms being a sensation of a foreign body in the throat, not disappearing on deglutition, and in many instances is located by the patient at the base of the tongue. Constant endeavor to clear the throat; cough, irritative in character, and not explained by any morbid process of the respiratory tract; laryngeal fatigue, as shown by the voice easily becoming tired, and by hoarseness. Hemorrhage may be quite severe, but practically consists of a staining of the expectoration. Every swallowing motion, if there is much enlargement, causes the tonsil to impinge either against the base of the tongue, faucial tonsils or epiglottis, with resulting discomfort. When the entire group of glands comprising the tonsil is enlarged or inflamed, there is a feeling of stiffness or actual pain on movement of the tongue. The objective symptoms will depend upon the character of the lesion present, as seen by the laryngoscope. The tonsil may be slightly enlarged from congestion, or the various degrees of acute inflammation, even to abscess formation, may be present.

The constitutional symptoms do not differ in any respect from those presented by the various simple or specific inflammations of the faucial tonsils. The temperature may run as high, while malaise and anorexia in severe cases are always present to a greater or less degree. The reflex symptomatology is varied, most prominent being cough; this is of a peculiar dry, nervous character, differing from the form of cough previously mentioned as resulting from irritation of the lingual tonsil by friction against adjoining tissues. More or less constant is the sense of constriction around the throat, referred to a level of the upper portion of the thyroid cartilage. In nervous or hysterical cases, globus hystericus may be simulated, especially in young women. Casadesus* has reported a case of hypertrophy giving rise to attacks of nocturnal asthma, which was cured by the use of the galvanocautery to the diseased glands.

The diagnosis of the various conditions can be made only by the laryngoscope. The prognosis, as far as life is concerned, is always very favorable, the only danger that is liable to occur being œdema of the glottis in severe acute inflammations, and that is somewhat remote. As to cure, that will depend upon whether the affection

*Casadesus, *Atlanta Medical and Surgical Journal*, October, 1894.

present is local or the result of some constitutional infection, such as syphilis. In general terms, treatment is eminently successful, the acute inflammations subsiding under appropriate treatment in from two to six days, and in the chronic hyperplasias cure may be effected in a few weeks at the most. In a few cases, occasionally seen, parts of the lymphoid groups will be successively inflamed and relapses are frequent. The frequency with which the lingual tonsil is diseased is more common than generally supposed. Scheppegrell* saw hypertrophy eight times in one hundred consecutive cases of naso-pharyngeal disease. No doubt, if more attention was paid to this part of the oro-pharynx, fully twenty per cent. of all our nose and throat patients would present some morbid alteration of this group of glands. The author last named reported fifteen cases, ten of which were females.

The study of the various pathological processes involving the lingual tonsil has caused me to construct the following classification. Until future studies have been made this must necessarily remain more or less incomplete. The various affections may be classed as follows:

1. Acute congestion. 2. Simple acute inflammation. 3. Peritonsilar inflammation. 4. Abscess. 5. Hypertrophy. 6. Acute follicular inflammation. 7. Chronic follicular inflammation. 8. Cheesy degeneration. 9. Syphilis. 10. New growths.

Acute congestion of the lingual tonsil is usually the result of some nervous excitement, and rapidly diminishes as the cause is removed. The patient complains only of a dry, nervous cough, due to the friction of the tonsil on the adjoining parts. This condition of congestion may also result from a "cold in the head" by reflex action. If the congestion is not arrested, it will, in a few hours, pass into the condition of simple acute inflammation, with pain, referred to the base of the tongue, fever, and the general symptom of acute inflammation, as seen in the faucial tonsil. The inflammation at this time may be so severe as to interfere with free motion of the tongue, and similarly, from congestion of the adjacent parts, the voice may become more or less affected. Cough is a constant symptom. This form rarely passes on to pus formation, and under appropriate treatment usually subsides in a few days. If the attacks occur frequently, usually from coryza, the condition gradually passes into hypertrophy of the glandular structure, with hyperplasia of the connective tissue elements.

The following case illustrates this simple inflammation, and also shows the effect produced upon the epiglottis, as occasionally seen. The patient, a woman, age 22 years, with a general sclerotic condition

*Scheppegrell, *Medical News*, October 19, 1892.

of the nose and pharynx, complained of pain and irritation at the base of the tongue, a sense of constriction around the neck was well marked, and mild constitutional symptoms were present. On examination, the lingual tonsil was found to be inflamed, and filling up the space between the papillæ maximæ and the epiglottic folds. Under treatment, relief was obtained in a few hours, with subsidence of the inflammation by the second day. On subsequent examination of the case a few months later, it was found that the apex of the epiglottis was firmly adherent to the base of the tongue, with a moderate amount of laryngeal irritation, due to the imperfect covering of the larynx by the epiglottis.

Acute inflammation is, as a general rule, a mild condition, differing in many respects from the much more serious form—peri-tonsilar inflammation. This condition is marked by constitutional symptoms only slightly less than those caused by the same variety of inflammation of the faucial tonsils. Fever may be as high as 104 or 105 degrees, in some cases with marked general prostration. The subjective symptoms are more severe than in the preceding forms, and when the peri-tonsilar infiltration becomes a feature of the affection, the entire tongue may become swollen and inflamed, motion and swallowing becoming nearly impossible. The secretion of saliva is increased to a marked extent, and the epiglottis may become involved, adding to the processes already present, the additional danger of œdema of the glottis. The cervical glands may be swollen, usually on one side, but depending upon the amount of inflammation present; in severe cases the glandular swelling is bilateral. This form of involvement of the fourth tonsil is well illustrated by five cases of peri-amygdalar cellulitis reported by Ruaulb*.

Abscess of the lingual tonsil may result from the simple form of inflammation, but is usually the sequence of a previous acute peri-amygdalar infiltration. The sense of suffocation is probably the most annoying symptom in this condition and an element of gravity is present in acute abscess, on account of the proximity of the pus collection to the larynx. It is hardly necessary to record the more common symptoms here, as they are identical with the same condition as seen in the faucial tonsils. A form of lingual tonsil abscess has been noted by Mounier† in two cases reported, in which all the symptoms were slight, with a very small amount of inflammation present. For these reasons he says that the abscess may readily pass unperceived.

Judging from reported cases and my own experience, hypertrophy

*Ruaulb, *Archiv. Internat. de Laryngol.* Vol. 5, No. 1.

†Mounier, *Annales des maladies de l'oreille, du larynx, du nez et du pharynx*, Paris, June 1894.

is the most frequent morbid condition met with in the lingual tonsil. The hypertrophic condition usually affects the gland, as used in a collective term, symmetrically, but cases are seen in which the enlargement may be in the median line, or either on one of the lateral halves. Although not able to ascertain the exact causes producing this condition of hypertrophy, yet it certainly seems to be due to repeated attacks of a moderate degree of acute congestion or inflammation, as is seen so frequently in the faucial tonsils. The following case will illustrate the general hypertrophy of the fourth tonsil: Miss L. R.; age 19 years. Has been treated for over one year for obstinate cough, worse in the morning and accompanied with profuse mucopurulent expectoration from the nasopharynx. Local and general treatment was used as directed to the cough, but were of no avail. On examination the following conditions were presented; a general hypertrophy of the pharyngeal ring of lymphoid tissue with considerable enlargement of the lingual tonsil. This hypertrophy was to such an extent, that the epiglottis was forced back over the upper portion of the larynx and its movements much restricted, the mass projecting above the level of the tongue. Under treatment, directed to this condition, the symptoms ameliorated, with a successful issue of the case on the subsidence of the mass of hypertrophied tissue.

Chronic enlargement is most frequent in women, and especially in singers.* This interference with phonation, especially the singing voice, depends upon the grade of hyperplasia, and to some extent upon the location, *i.e.*, laterally or in the median line. When the enlargement is most marked in the median line the foreign body sensation is most prominent, and in some cases this hypertrophy may be such that the epiglottis will be imbedded in the mass of new-formed tissue. With general hypertrophy, one spot of the tonsil is usually more irritated than another, as friction of this portion, with a production of cough and a keeping-up of the low grade of inflammation is constant, the seat of the largest amount of hyperplasia constantly impinging against the surface of the tongue, epiglottis or faucial tonsils. Hæmorrhage may occur, usually slight, but enough blood mixes with the saliva to attract the attention of the patient. This seems to occur mostly during the night, as recently seen in a young girl with simple hypertrophy, in which attention was called to the condition by the stain on her pillow when she arose in the morning. The hæmorrhage is small in amount, and can be readily explained by the number of vessels present in this region, as previously stated. Joal† has recently

*Dunbar Roy, *Medical News*, October 26th, 1895.

†Joal, *Revue de Laryng.*, etc., Paris, June 1st., 1894.

reported three interesting cases of hæmorrhage from the lingual tonsil, and Foster* also reported a case with bleeding, and called attention to the importance of examining the lingual tonsil when there is a history of bleeding from the throat.

If the hypertrophy be situated laterally there will be more or less pain on swallowing, and sometimes the pain will radiate to the ears. I now have a case of adductor vocal paralysis in which the left half of the lingual tonsil is as large as a hazel nut, pale in color, and not productive of any special symptoms, although if present they may be masked by the other conditions. This patient is a female, and also a singer by profession. McBride† has reported cases of hypertrophy, and gives an excellent colored plate of the condition in his book. Reflex symptoms produced by the enlargement are numerous; I have mentioned the most prominent in another part of this paper. Villecourt‡ has reported a peculiar case of hypertrophy in a woman aged thirty years, in which intense respiratory dyspnœa suddenly appeared, followed by cyanosis on the following day. The right arm appeared heavy, motion was difficult, cutaneous sensitiveness was obtunded, and the electrical contractility of the muscles diminished. Treatment of the lingual tonsil caused the local manifestations to improve on the third day, the other disorders disappearing on the eighth day. This was evidently a case of hypertrophy with an intercurrent acute inflammation, as in addition to the symptoms present of an acute disorder of the tonsil there were found, on inspection, two symmetrical growths at the base of the tongue, each the size of a bean, surrounded by disseminated granulations.

Acute follicular inflammation is characterized by the marked constitutional symptoms: the temperature is higher, the local symptoms more marked; and on the discharge of the mucus plugs filling the crypts the quicker decline of the symptoms than in the other forms of inflammatory involvement of these glands. The tonsil presents the ordinary appearances of inflammation, with the mouths of the follicles dilated, each follicle involved being filled with a mass of semi-solid mucus. The severity of the local and general symptoms being directly dependent on the amount of follicular involvement. Chronic follicular changes, as a general rule, are a result of previous acute inflammations. The glands are enlarged, hyperplasia of gland cells being the most prominent feature, with little involvement of the inter-cellular connective tissue. The tonsil is lobulated, usually on one side of the

*Hal Foster, LARYNGOSCOPE, Vol. 1, No. 4.

†McBride, Diseases of Nose, Throat and Ear.

‡Villecourt, *Gazette des hopitaux*, Paris, January 9th, 1894.

median line, but it may be seen as a bilateral condition. The symptoms are those of simple hypertrophy, with an increased mucous secretion and a greater liability to constant acute inflammations. Congestion as in simple hypertrophy may be present, but bleeding rarely occurs.

When the epithelial elements are especially involved we have the condition of cheesy degeneration—usually the result of previous inflammation of the pharyngeal lymphoid ring and generally present in women or young girls, in connection with cheesy degeneration of the faucial tonsils. The following case will illustrate the condition:

C. Q.; female, age 16 years. Was seen November 3d, 1896, complaining of a sensation of a foreign body in the position of the lingual tonsil, and with the general symptom complex of naso-pharyngeal catarrh. The turbinals were hypertrophied. Cough irregular, dry and without result as far as the raising of mucus was concerned. The pharynx was sclerotic, the faucial tonsils studded with cheesy masses, and the seat of chronic folliculitis. The lingual tonsil was symmetrically enlarged, and the glandular crypts on each of its lateral halves were filled with necrosed, cheesy material, projecting from the surface of the already enlarged tissues. The entire mass of tonsilar tissue at the base of the tongue was surrounded by a moderate degree of inflammation, and was enlarged to about one-fourth its usual size.

Syphilis in its various manifestations may involve the lingual tonsil alone, or, as is usually the case, the tonsil becomes affected with the disease along with other parts of the economy. I have been unable to find a case reported of hereditary syphilis in this locality, although Allen* has observed hypertrophy of the lingual tonsil in this form of the disease, and remarks that it is more common in women than in men. As the lingual tonsil occupies, to some extent, a sheltered position in the oro-pharynx, being protected by the tongue and epiglottis, primary syphilitic infection is rarely seen, although the original lesion has been observed in this locality. Schiffers† saw a case in which the primary lesion was situated on the left half of the lingual tonsil, with swelling of the cervical glands on the same side. The pathology and symptomatology of the primary sore are similar to that when located on the faucial tonsils.

As usually seen in its later stages, syphilis presents its manifestations in two forms in this locality. There may be small protuberances separated from one another by the intervening connective tissue of the

*Chas. W. Allen, Morrow's System Syphilology.

†F. Schiffers, *Archives Internationales de laryngologie, de rhinologie et d'otologie*, Paris November 30th, 1894.

glands, and are grayish-red in color. On the summit of these prominences is seen the typical mucous plaque, clean cut and well defined from the surrounding surface, each enlargement corresponding to a tonsilar crypt or group of crypts, which are inflamed and their walls adherent. This process is localized without involvement of the adjoining tissues. The other form is characterized by involvement of one-half or the entire tonsilar mass, showing itself as a single tumefaction, slight adjacent swelling, and capped with a mucous plaque. The mass is ovoid in shape, and a much greater area is involved than in the first form described. Besides the infiltration of the closed follicles there is an interstitial infiltration; in other words a sub-acute peri-folliculitis. The first variety rarely becomes transformed into that of the last. Other portions of the throat are usually involved when these lesions are present. And if the pharyngeal lesions are at all severe the lingual tonsil is generally involved in the morbid process.* According to Natier† the syphilitic tertiary lesions are very rare, as he, in 1890, had only succeeded in finding fifteen cases in the French literature. The diagnosis of the tertiary lesions is very difficult, and yet it is of the utmost importance that specific treatment be promptly instituted, as deep ulceration is liable to occur, and important vessels may become involved in the process.

New growths are very rare, the most common being retention cysts, due to the closing of the stomata of the crypts from inflammatory changes. Reuda‡ reported a case of a retention cyst in a woman 25 years old, the prominent symptom being the sensation of a foreign body in the throat. Onodi§ saw a case of fibro-sarcoma, the diagnosis being confirmed by the microscope; the case was that of a girl aged 17 years. He found but two other cases reported in literature.

The treatment of affections of the lingual tonsil is essentially local, except in a few cases in which the local process may be the result of some general disease, or where there is a marked nervous element; in these cases removal of the cause and appropriate general remedies are indicated. In acute congestion or inflammation an astringent gargle, rhus glabra being most efficient in my hands, with local applications of tr. ferri chloridi, ℥ij to glycerin ℥j. If the inflammation be of the peritonsilar form, more active remedies are indicated, such as iron in stronger solution, nitrate of silver, gr. C to aqua ℥j., tannic acid, or any of the remedies used in the severe acute inflammations of the fau-

*Seifert, *Munchener medicinische Wochenschrift*, Münich, February, 1894.

†Natier, *Annals de Polycl. de Paris*, 1890, page 109.

‡Rueda, *Arch. Internacionales de laringologia, otologia et rinologia*, Barcelona, November, 1893.

§Onodi, *Revue de laryng., etc.*, October 15th, 1893.

cial tonsils. Hot inhalations are of value, especially if there is any local œdema; the mere inhalation of steam usually gives great comfort to the patient. Frequently cold will be found grateful to the patient, when ice cracked in small pieces may be allowed to melt in the mouth. Temporary relief and the reduction of any excessive swelling may be relieved by local application of a four per cent. cocaine or eucaine solution; but these drugs are used with difficulty, as they are so rapidly washed away by the excessive flow of saliva.

If the case go on to pus formation, the abscess must be opened, the galvano-cautery being preferred to the bistoury on account of the abundant blood supply of this region. Complications, such as the extension of the inflammation to the tongue or larynx, must be treated promptly. When a small hypertrophy is present with severe symptoms, especially cough, a four per cent. cocaine solution will reduce the enlargement, and greatly aid in localizing the cause of the irritative symptoms, by causing their temporary absence. For the cure of the hyperplasia, iodine, or a saturated solution of nitrate of silver, especially the latter, are of value. The galvano-cautery or snare may be used when there is a large amount of hypertrophied tissue, but caution must be exercised in their use to avoid interference with the adjacent tissues.

The follicular inflammations are treated by the usual methods applicable to the faucial tonsils. When cheesy masses are present in the crypts, they must be removed with the spoon or dull curette, and the interior of the crypt cauterized with a delicate cautery point, or the solid stick of silver. Syphilis should be treated with the usual specific remedies, iodide of potash, and mercury in some form; when ulcerations are present, local dusting with calomel, in conjunction with constitutional treatment, will probably give the best results. New growths require operative interference, cysts being evacuated, and their walls cauterized or dissected out. Merely an outline of treatment has been here suggested, as the treatment of this portion of the lymphoid zone differs little from that applicable to the faucial tonsils.

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