THE LINGUAL TONSIL: GENERAL CONSIDERATION AND ITS NEGLECT.*

DR. HERMAN B. COHEN, Philadelphia, Pa.

I hesitate considerably in reviewing this subject with you and I hope you may not think that it is with any presumptuous idea of teaching you anything. It is rather to bring strongly before you this apparently unimportant structure in its influence, association and causation in many of the symptoms complained of by patients with throat trouble.

It is one of those structures that is not seen by direct inspection but requires the aid of the laryngeal mirror and unless a point is made to examine this organ many cases will remain unimproved or unrelieved of their symptoms. Before reciting the synopsis of several cases, I will delve but lightly into the general consideration of this tonsil, known as the fourth member of the pharyngeal ring or the connecting member of the so-called Waldeyer's ring.

Anatomy and embryology. The lingual tonsil is not as confining as the faucial tonsil and is situated antero-posteriorly from the circumvallate papillae to the epiglottis on the base of the tongue, projecting backward so that when the structure is enlarged it may touch the tip of the epiglottis. On either side they are in close proximity to the inferior poles of the faucial tonsils. The tonsil consists of lymphoid nodules commonly arranged in groups of two or three nodules, prominent and contiguous, extending laterally from either side of the central line, making what might be termed a right and left lobe. This central line is known as the glosso-epiglottic ligament. The number of nodules vary, as shown by Ostman, from 34 to 102, averaging 66. The size varies from one-half to six millimeters. They rest on a basement membrane of fibrous tissue analogous to the capsule of the faucial tonsils; but never so compact or so developed as that tissue. A lateral section shows the nodules as discrete hemispheres, the mucosa at the bottom of the meager intervals between them being free from lymphoid tissue, each presenting two or three crypts. The epithelium is like that of the faucial tonsils, stratified and squamous; the lymphoid tissue differs in no way from that of the faucial tonsils. Its arterial supply is from the dorsal lingual branch of the lingual artery. The veins which are an important part in the practical consideration, are part of the plexus draining the tongue. The dorsal veins form a submucous

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plexus on the back of the tongue and above the larynx and joining those of the pharynx and faucial tonsils. The lymphatic drainage joins a multitude of pores throughout the tongue and empties into the supra-hyoid glands and the submaxillary and deep cervical glands. Situated in the posterior third of the tongue, it receives its common sensation fibers from the glossopharyngeal and superior laryngeal of the vagus.

We are indebted to the research work of Wyatt, Wingrave and Rosenberg for the careful and detailed accounts of the developmental origin of the tongue. They found that the two portions of the tongue have different origins, the sulcus terminalis being taken as the division between the oro-glossus and pharyngo-glossus. The part behind the pharyngo-glossus contains the lingual tonsil. This difference of origin, though the two parts are in immediate connection, explains why the anterior portion differs completely from the posterior portion anatomically, physiologically and pathologically. According to Piersol, the development of this tonsil occurs in the last two months of fetal life, the faucial *anlage* appearing at the fourth fetal month. This is corroborated by Bickel, who further states that the lingual tonsil is the last to undergo atrophy as the child ripens into womanhood or manhood.

Physiology. Being similar in structure, we must assume a similar function to the lingual tonsil as to the other lymphoid glands. To act as a filter for the afferent lymph current and the production of lymphocytes are its functions. Its chief function, therefore, is one of protection similar to that of its neighbors. A similar indictment may be decreed upon the lingual tonsils as upon diseased and hypertrophied faucial and pharyngeal tonsils, namely, that they are only protective agents and normal anatomically when free of disease. G. Lewis, in 1863, was the first to call attention to the clinical aspect of the subject, though Betz, in 1879, was awarded this credit.

Diseases. The diseases of the lingual tonsil are similar to those of the faucial tonsil but usually of milder form.

Acute catarrhal inflammation (acute lingual tonsillitis). This condition is the same as in the faucial tonsils and often accompanies the latter.

Chronic retention in the crypts rarely occurs, as can be understood by the free and open drainage; therefore, from the point of view of systemic infection the lingual tonsils are not as important as the other members of the tonsillar group.

Hyperkeratosis frequently occurs with symptoms of pain resulting from contact.

Abscess formation beneath the capsule occurs and is therefore similar to peritonsillar abscess.

Acute edema is seen in acute anginas and associated with laryngeal edema.

Mycosis; leprosy; tuberculosis; lues; varicose veins and *hypertrophy* are other conditions which may affect the lingual tonsil.

I mentioned varicosity and hypertrophic conditions last because they are by far the commoner affections and I wish to dwell a little more on these conditions.

Varicosities consist of dilated and tortuous veins arranged in an irregular fanlike shape over the base of the tongue. According to Vernuil, superficial varices only make their appearance when the deep varices have acquired a certain development. According to Escat, who fathered the above fact, "Many kinds of neuralgias otherwise inexplicable, are to-day attributed to circulatory troubles in the satellite veins of the nerves and to a consecutive neuritis." Quenu has thus explained certain neuralgias. The trunk of the lingual nerve, the evident seat of glossodynia, is in effect, according to Fourcher, accompanied by a satellite vein and according to Zuckerkandl, even by two such veins. This anatomical fact is held by Escat to support this hypothesis and that of Piotrowski that all neuroses in this situation may be attributed to superficial and deep varices. Varix is a frequent accompaniment of hypertrophy and is a true manifestation of a disturbance of the circulation. Infectious inflammation of the pharynx and faucial tonsils and infection of the lymphoid tissue of the lingual tonsil are additional etiological factors. Browne believes that a constitutional or acquired debility of the vasomotor system is the chief cause. Some cases are reported as occurring at the menopause. Other etiological factors are constipation, hepatic cirrhosis and chronic intestinal disturbance. Do these apparent causes of varix of the lingual tonsil prove a disturbance of the circulation to be the underlying factor? May I emphasize what has already been suggested, the resemblance or the analogue between varix of the tongue and rector hemorrhoids?

Symptoms. The symptoms of the two conditions are practically alike with a few special symptoms depending upon the degree of hypertrophy and varicosity, also upon the underlying cause. I shall not attempt to divide them into groups such as local and reflex, as several of the symptoms are the result of a vicious circle.

The symptoms in the order in which they are more often complained of, are: cough, foreign body sensation, paresthesia, voice changes, hemorrhage and respiratory distress. In inflammatory con-

ditions there is constant pain at the root of the tongue, irritation of the structures at the entrance of the larynx giving rise to frequent coughing. There is also pain on swallowing referred to the base of the tongue and region of the hyoid bone. You will recall from the earlier part of the paper that the reason for this would be the lymphatic drainage in that direction. The glands are swollen and red and specks of lacunar exudation are present. Abscess may result following this condition but it is rather rare. Lingual quincy, if this term may be used, is less common than faucial, but when it occurs edema of the glottis is also present. I shall later quote you a case of this condition. Hemorrhage is a frequent symptom of varix. It is rarely profuse but is sometimes present on arising in the morning. With each succeeding hemorrhage the varicose condition is increased and thus a vicious circle is established. Hemorrhage from here does not produce anemia, but Dickson lays important stress on hemorrhage in this region and considers it of diagnostic importance in hemorrhagic lesions of the brain and sometimes in cardiac weakness. As a reflex symptom cough and foreign body sensation may be mentioned. Symptoms of glossodynia or even imaginary ulcer of the tongue may result. Loss of taste may follow from a fibroid change of the lingual tonsil.

The neurotic element is highly demonstrated in those individuals. The slightest depression or exhaustion of the nervous system will bring forth the symptoms prominently which are otherwise not manifest in those patients whose nervous organism is well balanced. Globus hystericus is frequently due to some lesion of the lingual tonsil. Paresthesia may vary and may even approach a state of hysteria. Dyspnea is more often due to nervous stimulation than to actual obstruction. Cases where the tip of the epiglottis has been imbedded into the lingual mass have been reported. Why therefore, cannot attacks of asthma be brought about by disease of the lingual tonsil? As a matter of fact, Casadesus reported a case of nocturnal asthma cured by the cautery applied to the lingual tonsil. Severe paroxysmal dyspnea has frequently been cured by local treatment. Diseased lingual tonsillar tissue is a dominating factor in the etiology of recurrent colds. The barking cough of puberty is a frequent occurrence due to slight enlargement of this tonsil. The cough is hard, sharp, metallic, ineffectual, and without other respiratory lesions and is not relieved by the usual remedies. This constant, irritating cough is sufficient to cause impairment of health and give our patient great mental anxiety from his belief that he has tuberculosis. Twenty to twenty-five per cent of the pathological changes

in the lingual tonsil occur in professional voice users (clergymen, lawyers, school teachers, stock brokers, auctioneers, singers, etc.) The symptoms will vary if the condition is present in the basso voice; the voice will be less impaired than if present in the soprano voice, where the epiglottis is more erect and less apt to come in contact with the diseased lingual tonsil.

Of the tumors in this region or those arising from the lingual tonsil there are fibroma, papilloma, angioma, cysts and lipoma. Accessory and aberrant thyroids in this region have also been reported. When an accessory thyroid is present it may be mistaken for hypertrophy of one of the lingual nodules but the thyroid is then centrally situated at the site of the foramen cecum and is different in appearance from the lingual tonsil.

A malignant growth may make its seat in the lingual tonsil, though rarely as a primary growth as compared with the faucial tonsil.

The acute infectious diseases in childhood and especially those associated with throat lesions (diphtheria, scarlet fever, influenza and whooping cough) play an important part as predisposing influences in the production of hyperplasia of this gland.. Grippe or influenza shows a special predilection for the mucosa of the upper air passages.

Syphilis produces hypertrophy as does also bronchitis. Tuberculosis may be present as an associated condition of the diseased lingual tonsil or it may appear as a primary lesion.

Hypertrophy or marked hyperplasia occurs in middle or adult life but is seldom seen in children. The youngest case on record is reported by Hickman of a child who died of asphyxia at birth. Autopsy showed that death was caused by the enormous hypertrophy of the lingual tonsil. McBride reports a case of a child seven years of age. Oppenheimer's report shows that 20 per cent of the hyperplasia cases under his care seeking relief were between 30 and 40 years of age. Lennox-Browne of London found hypertrophy and varix more frequent between 25 and 40 years of age. Clark thinks hypertrophy is more common between 18 and 35 years while Johnson of Coffeyville, Kansas, found hypertrophy between 30 and 45 years of age.

As to sex, practically all men have found the hypertrophy to be more common in the female. Varicose conditions have been found by Phillips to be more common in the male sex. I should like to call attention to what might be called a coincidence, namely that neuropathic reactions are more often expressed by females. There-

fore this factor will help make the number larger as they are more apt to seek relief.

Earlier in my paper I referred to the etiology of hypertrophy of the lingual tonsil. Ballenger, in his text-book, states: "It is probably caused by repeated or continued infection of the lymph structures of the pharynx, fauces and pharyngeal tonsils. I should like to broaden this statement and add, that the repeated or continued infection may come from two sources: Infectious and constitutional diseases; from repeated contact of surrounding structures and the intake of irritating foodstuffs, acids and gases. To substantiate the latter remarks, we find many cases of hypertrophy of the lingual tonsil in people who are fond of condiments, excessive hot and cold foods, alcoholics, etc. These all have an irritating effect and help to keep up the pathological condition, at the same time aggravating the symptoms already present. Another point: In hypertrophy without symptoms the lingual tonsil may at the menstrual period become congested to such an extent as to give rise to all the symptoms of dysmenorrhea. I shall later quote a case bearing out this point. Éllel reports a case where the cough and other symptoms complained of were absent between the menstrual periods. What can we conclude from this fact? May I suggest that in pregnancy where the persistent cough cannot be explained it would be well to always look for hypertrophy of the lingual tonsil.

Treatment. The general treatment consists in the removal of alcoholics, tobacco and irritating or hot foods. Tonic treatment alone is of little use and should not be depended upon. Sajous was accustomed to give small amounts of potassium iodide and mercury even in non-specific cases and has found the treatment of considerable help.

Locally the following may be tried: *For varix*, adrenalin, cocaine or eucaine, silver nitrate in varied strengths from 12½ to 25 per cent. Stronger solutions should be avoided. This drug or the cautery should be tried in slight hypertrophic conditions. Menthol in olive oil, 15 grains to the ounce, or glycerotannin should also be tried and are of considerable value. Other agents are trichloroacetic acid, chromic acid beaded on a probe and passed over the tissue. Two mixtures that I have used and am fond of, both for hypertrophic faucial as well as hypertrophic lingual tonsils are: (1) *Glycerole of iodine*. Iodin, grs. 12 to 16; potassium iodide grs. 24 to 32; glycerin, one ounce. (2) *Tincture of iodine* one drachm to the ounce of glycerotannin. These mixtures are not original but I have good results from them, especially with the latter mixture.

After a course of treatment two or preferably three times weekly, for about three weeks, with little or no improvement, we should consider the operative means. A large pair of curved scissors may be used but I do not consider these as satisfactory, at least in my hands, as the lingual tonsillotome. When operating for the removal of the lingual tonsil, the same rule applies as in the operation for the removal of the faucial tonsil. That of course is the complete removal, as far as is possible, of all lymphatic and teat-like projections. When a few are left remaining especially in the median line, they are apt to keep up a local irritation and set up or retain the previous reflex cough.

For varicose conditions associated with hypertrophy, the hypertrophied tissue may be removed by scissors or by tonsillotome. Even better in such cases would be the galvano-cautery.

For after-treatment I have followed what Ballenger suggests, viz., massaging the wound with a cotton applicator dipped in a mixture of equal parts of glycerin, tincture of iodine and tincture of chloride of iron at intervals of twenty-four hours.

For abscess formation at the base of the tongue involving the lingual tonsil, the treatment, of course, is free incision, followed by hot alkaline gargles.

For acute edema numerous scarifications preceded by cocaine and adrenalin locally.

For acute catarrhal lingual tonsillitis and mycosis, local applications of 12½ to 25 per cent of silver nitrate.

Let me now cite you a few cases with what I call typical symptoms which should make an examination of the lingual tonsil a necessity, if the physician desires to do justice to himself and to his patient.

Case 689. (M. C. Hosp.) Hypertrophy of the lingual tonsil. Symptoms as given by patient: "Something in the throat which will not come up or go down. Belching of gas during which act the throat seems to close up."

Case 1804. (M. C. Hosp.) Complained of irritation of the throat with hoarseness at times. Also dry throat and frequent colds.

Case 2290. (M. C. Hosp.) M. O. M. Hysterical aphonia with hyperemic and hypertrophied lingual tonsil. Symptoms: After talking a few minutes she feels lumps in the throat followed by aphonia. No dysphagia; some phlegm in throat. The patient is of nervous temperament.

Case 3411. (M. C. Hosp.) M. L., male 28; knitter. *Diagnosis:* Hypertrophy of lingual tonsil. *History:* Sensation of something in

the throat which makes him cough in order to get it out. Voice occasionally becomes thickened; states there is a good deal of impairment in speech.

Case 3511. (M. C. Hosp.) S. J., female, 40. *Diagnosis:* Hypertrophy of faucial and lingual tonsils. *Brief history:* Rawness in the throat especially at night. Feels as though there is a fishbone in the throat. Patient gave no history of eating fish. Has a croupy cough.

Case 2999. (M. C. Hosp.) H. B., 32, female, stenographer. *Diagnosis:* Hypertrophy of lingual tonsil. *History:* Subject to attacks of sore throat, the last attack lasting two months; slight cough; but is annoyed by the necessity of hawking up of phlegm and occasionally of blood. The condition seemed to be worse during the menstrual flow. In this latter case I did not think the condition of the lingual tonsil was sufficient to give the patient the symptoms she complained of and so I called upon Dr. Ridpath to examine the patient. He advised removal of patient's lingual tonsil. I followed his advice and the patient in a few days was rid of her trouble. This is the case that also had dysmenorrhea associated with the lingual tonsil trouble. It is as a result of this case that I took up this subject in detail and have attempted to give my findings in this paper.

Case 289. (P.) E. D., male, 43, baker, gave the following history: Previous to his call to see me, the patient, three months ago had his faucial tonsils removed for the following symptoms: Fullness in the throat, tickling sensation and the necessity of hawking to clear his throat of mucus and phlegm. Examination revealed a massive symmetrical enlargement of the lingual tonsil, The tip of the epiglottis was virtually sticking into the furrows of the lingual tonsil. The result in short of removal of this tonsil was that the patient is entirely free of all the symptoms previously complained of in relation to his throat.

Case 2044. (J. H.) *History in brief:* Sore throat for six years so annoying as to keep the patient awake many nights, constant desire to clear the throat. Examination revealed a marked varicosity and on further questioning I found that she has been a sufferer of some circulatory disturbance. I have treated her twice weekly, applying silver nitrate. The reply at her last visit was "she cannot express what a relief it was to have a good night's sleep." The patient has some nasal affection which prevents perfect breathing and will have to be cleared up before she is entirely cured. I could go on citing many cases but all will give practically the same symptomatology.

Earlier in my paper I mentioned a case of lingual abscess with edema of the epiglottis—another case which we were able to give quick relief, the condition having been overlooked by the family physician.

Case 3311. (M. C. Hosp.) G. M., male, 32; moulder. Had an attack of tonsillitis ten days before I saw him. First the left and then the right tonsil became affected. He was directed to use gargles but received no benefit from their use. He noticed that he began to have painful dysphagia. After another visit to the family physician he was directed to continue the use of the gargle but with no relief. On examination the patient remarked to me that the condition annoyed him so much that he was tempted to end his life. Examination revealed an inflamed and swollen posterior portion of the tongue, diseased tonsils, edema of the epiglottis and the whole tongue heavily coated. Under cocaine anesthesia I made several scarifications in the glosso-epiglottic space followed by a deep incision of the left lingual tonsil. Pus at once oozed out. Hot alkaline gargles and medicated inhalations were ordered. On the following day the patient declared that he would remain in this world and that he was perfectly well. My advice to have his faucial tonsils taken out was cast off with the excuse that "he could not spare the time."

Part of the title of this paper is the "Neglect of the Lingual Tonsil." I have not directly emphasized this aspect but by trying to prove the frequency with which this tonsil is the cause of many throat symptoms, I will have satisfied myself and, I trust, also my audience that this structure is greatly overlooked. I have studied over three thousand history cards in two dispensaries that I am associated with, and in one dispensary about 33 per cent of the cards have the condition of the lingual tonsil recorded. In the other institution about 5 per cent of the histories have note of the condition; in other words, a gross neglect in the examination of the throat and an injustice to our patients with no advancement of intelligence to ourselves. In the above three thousand cases we found 55 cases of abnormal conditions of the lingual tonsil. Of these, forty-three were hypertrophied; eight varicosities; two combined, i. e., varicose condition associated with hypertrophy; one abscess condition. Of the hypertrophied tonsils, one of the cases was associated with edema.

Of the 55 cases, 37 were females and 18 were males, or 67 per cent and 33 per cent respectively. Twelve, or 22 per cent of the cases were under 20 years of age; 16, or 29 per cent were between 20 and 30 and 27, or 49 per cent were 30 and above, up to 70 years of age.

Further study revealed the following facts: Sixteen had no associated condition; four had such condition as deflected septum or spur of the septum, conditions which, to my mind, have no material bearing. Ten cases were associated with hypertrophied faucial tonsils which might have some bearing, especially those cases under twenty years of age. The remaining 25 cases had such conditions as laryngitis, pharyngitis, lupus, glossitis, rhinitis and sinusitis, which I firmly believe are factors in the production of the vicious circle of the symptom complex. Of the first thirty cases mentioned, the study revealed that those cases are either below 25 years of age where the lingual tonsil has failed to atrophy or has remained hypertrophied by its association with its neighbors the faucial tonsils or that in those cases past middle life, the condition has been brought about by an impairment of the circulation, some constitutional disturbance or nervous state, but not by any local condition such as pharyngitis, tuberculous laryngitis, etc., as a primary condition *per se*.

Conclusions. 1. The lingual tonsil is greatly neglected in the examination of the throat.

2. Hypertrophy is a more frequent occurrence in females than in males.

3. Varicose condition of this tonsil is a frequent association of hypertrophy and is present in persons with disturbed circulation, being especially frequent in tuberculous patients. In my work at the Lucien Moss Home for Tuberculous and Incurable patients, practically all of the tuberculous patients have varicose lingual tonsils.

4. In my study of 55 cases of diseased lingual tonsils the time of more frequent occurrence was between 30 and 45 years of age.

5. I firmly believe that there is some connection between the lingual tonsil when hypertrophied or otherwise diseased and ovarian disturbance, possibly a similar connection to the congestive swelling and sensibility of the tuberculum septi and anterior end of the inferior and middle turbinates in dysmenorrhea.

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