

## TUBERCULOSIS OF THE TONGUE \*

### WITH A CASE REPORT

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The tongue appears to possess considerable immunity against invasion by the tubercle bacillus, and while tuberculosis is undoubtedly more frequently encountered in this organ than the modern textbooks would indicate, yet a review of the literature suggests that this particular manifestation of the disease is infrequently reported.

To Portal<sup>1</sup> is usually given the credit for describing the first case of tuberculosis of the tongue. Portal's paper was published in 1804, and since that time practically every decade has seen a sprinkling of cases appearing in the literature.

It is not the intent to present here a complete bibliographic review of tuberculosis of the tongue. To attempt this would result in a duplication of effort since such a digest is available in the excellent paper by Scott<sup>2</sup>, who reviews the literature to 1916 with a collection of 231 cases, 26 of which were primary. Scott also contributes one case. The patient was a soldier aged 32 years. The lesion on the tongue existed for four years, during which time the man was repeatedly examined for pulmonary tuberculosis with negative results. It was later determined that both lungs possessed a tuberculous involvement. Since the publication of Scott's paper a number of new cases have been reported and a brief summary of these follows.

Durante<sup>3</sup> discusses the pathologic and surgical aspect of the disease and describes five cases from material in the Mayo Clinic. Three of the cases were males aged 24, 40 and 46 years respectively, while the ages of the females were 30 and 46 years respectively.

Three of the cases were associated with the respiratory type of the disease, while in two it was not possible to determine any involvement except the tongue. Durante ends his paper with a formidable list of references on the subject.

White and Marcy<sup>4</sup> describe a case in a man who had suffered from pulmonary tuberculosis for about four and one half years previous

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to the development of the tongue lesions. This case is of particular interest because of the fact that the authors were able to effect a healing of the tongue lesion by repeated injections of Koch's old tuberculin.

Besley<sup>5</sup> reports a case in a male age 52 with active pulmonary tuberculosis with sputum showing the bacilli. Besley's case had previously been erroneously diagnosed as tongue carcinoma.

Taddei<sup>6</sup> reports a case in a woman 52 years old with a tongue lesion of two months duration. The tongue lesion was perhaps primary since there was no other evidence of the disease. The nodule ulcerated and was removed, and a guinea-pig inoculation with some of the infected tissue was successful in demonstrating the true nature of the infection.

Handfield-Jones<sup>7</sup> gives a thorough presentation of the pathologic and surgical aspects of the disease, and presents five cases, three males and two females. One patient, a male, who was affected with pulmonary tuberculosis had a history of having bitten his tongue seven weeks before ulceration appeared. Three of Handfield-Jones's cases had unmistakable pulmonary tuberculosis, with the tongue lesion appearing secondary, while in two there was no evidence of primary tuberculosis elsewhere. The ages of the males were 59, 28 and 42 years respectively, while the females were 37 and 42 years respectively. The average age of this series was 41.

Fantozzi<sup>8</sup> describes an interesting case in a woman age 52, who developed a tuberculous lesion of the tongue, about one month after an injury to the zygoma region which was incurred by falling to the floor.

Morrow and Miller<sup>9</sup>, in a splendid paper, report sixteen cases in which all but one were males. Of the sixteen, fifteen were secondary while one was perhaps primary. These authors also present a table showing that 40 per cent of the patients in their series were between the ages of 30 and 40, the average age of all patients being 41.7 years. They also mention as a possible explanation of the high incidence of the disease in the male, the fact that he is more subject to trauma of the tongue from carious teeth, pipe-smoking and the frequent practice of putting metallic objects like nails into the mouth.

The sixteen cases reported were from a clinic of 1444 tuberculous patients during a period of four years. This would give the percentage of incidence at a little less than 1 per cent.

Finney and Finney<sup>10</sup> report fifteen cases of which thirteen were males and two females. Five were thought to be primary. Three of the cases were mistaken for carcinoma of the tongue and were operated upon for this condition. The majority of these authors' cases were in the forties, the average for all being 41.7 years.

Henry<sup>11</sup> describes four cases, all males, suffering from pulmonary tuberculosis, with the tongue lesions secondary. The sputa of all four patients contained tubercle bacilli in considerable numbers. The ages of Henry's cases were 54, 29, 24 and 40 years respectively. The average for all was 37 years.

Bass<sup>12</sup> gives a description of the disease together with an extensive bibliography, and presents two cases, one a physician age 43 years, male, with a doubtful history of tuberculosis elsewhere; the other a

TABLE I  
*Summary of the Cases Reported above*

Author	Number of cases	Sex		Age average	Lesion	
		Male	Female		Primary*	Secondary
Scott <sup>2</sup> . . . . .	1	1	0	32	0	1
Durante <sup>3</sup> . . . . .	5	3	2	37	2	3
White & Marcy <sup>4</sup> . . . . .	1	1	0	30	0	1
Besley <sup>5</sup> . . . . .	1	1	0	52	0	1
Taddei <sup>6</sup> . . . . .	1	0	1	52	1	0
Handfield-Jones <sup>7</sup> . . . . .	5	3	2	41	2	3
Fantozzi <sup>8</sup> . . . . .	1	0	1	52	1	0
Morrow & Miller <sup>9</sup> . . . . .	16	15	1	41.7	1	15
Finney & Finney <sup>10</sup> . . . . .	15	13	2	41.7	5	10
Henry <sup>11</sup> . . . . .	4	4	0	37	0	4
Bass <sup>12</sup> . . . . .	2	2	0	54	1	1

\* The word primary is used here in a restricted sense, meaning that in most instances it was impossible, from the available information to determine primary lesions elsewhere.

male age 66 years having in addition to the tongue lesion a tuberculous adenitis. This second case possessed no history or clinical evidence of tuberculosis except the tongue and submaxillary lymph nodes, although previously, two wives of this man had succumbed to the disease.

The fifty-two cases reported above added to the 231 cases previously collected by Scott<sup>2</sup> give a total of 283 cases of tuberculosis of the tongue which have been reported to date. Perhaps the actual

total is slightly above this figure since it is difficult for any one author to be quite sure of having reviewed all the literature on such a subject as this.

From the above chart we see that forty-three of the fifty-two cases were males while only nine were females. The age of greatest incidence is interesting in that the majority of the cases were in the early forties, with the average for the entire fifty-two cases being 42.7 years. The tongue form of this disease is rarely primary, there being but thirteen of the fifty-two cases which might be classified as such. However, as mentioned in the footnote, it is decidedly difficult to classify tongue lesions as primary, unless the possibility of tuberculous infection elsewhere is ruled out by a necropsy or other suitable procedures. Using Scott's<sup>2</sup> figures again, we find that out of the total 283 cases there are only thirty-nine which might be classed as primary. This emphasizes the importance of a thorough search for tuberculosis in some other part of the body when the infection is found in the tongue.

Morrow and Miller's<sup>9</sup> statement that they found a little less than 1 per cent of a tuberculous population of 1444 affected with the tongue form of the disease, is very suggestive that tuberculosis of the tongue is considered to be rare. It might be suggested that if special attention were given to this organ during the physical examination of the living, and at necropsy of those dying of tuberculosis, the reputed rarity of this form of the disease might be disproved.

The strikingly high percentage of males over females is remarkable and has not, in my opinion, been logically explained by those who have studied and described this form of tuberculosis. Dental caries and sharp jagged teeth have been attributed as factors influencing the high incidence in the male, but without sufficient proof. I have been informed by dentists that jagged points are seen more frequently in men than in women due perhaps to chewing of tobacco which causes an uneven wearing of the teeth. The sharp points may in turn cause abrasions. However, it cannot be properly assumed that all or even the majority of men affected with tuberculosis of the tongue have been chewers of tobacco. On the other hand, it is probably correct to assume that none of the women affected was addicted to this habit. The evidence here while perhaps suggestive is not conclusive and certainly is not sufficient to explain the matter in its entirety. Some mention that men in certain vocations, such as car-

penry and shoe repairing, frequently carry in their mouths metallic objects such as nails, and, of course, the likelihood of trauma that would permit the entrance of the tubercle bacillus into the mucosa and underlying tissues is considerable. This explanation of the high incidence of tuberculosis of the tongue in the male is entirely inadequate when one considers that carpenters and shoemakers were conspicuous by their absence in the case histories reported.

While I feel that the majority of the tongue lesions arise from the inoculation of a break in the continuity of the mucosa of the organ, usually in the nature of a traumatism, I fail to recognize any factor of a material kind that sufficiently accounts for the predominance of cases in the male.

In a matter of this kind, one is tempted to suggest as a hypothesis a sex susceptibility which may be possessed by certain males, and to a lesser degree or not at all by females. The apparent natural immunity of striated muscle to the tubercle bacillus has been commented upon many times, and is perhaps the explanation in part at least of why the tongue is so rarely involved. The proposition of susceptibility is of sufficient importance to be considered at least a contributory factor in those in which the tongue is affected. The influence of susceptibility and immunity must remain a matter of conjecture since adequate proof at present is impossible to assemble.

There can be no doubt that the tongue of all sufferers of open pulmonary, pharyngeal and laryngeal tuberculosis is continuously exposed to secondary infection by the bacilli laden secretions with which the tongue is in constant contact. The wonder is that it succumbs so infrequently to invasion.

In a few instances the cases possessed a history of tongue lacerations by self-inflicted bites. Such trauma is common even in the non-tuberculous as the personal experience of all of us could testify. No doubt many bite wounds that later became sites of tuberculous lesions were considered inconsequential and promptly forgotten. As a consequence perhaps bite wounds are not mentioned as frequently as their true position in the pathogenesis of the disease warrants.

Some have placed, I think, undue emphasis upon the effect of pipe-smoking as a contributory factor in causing the tongue lesion. From the evidence presented in the reported cases, it is difficult to look upon pipe-smoking as playing any rôle whatever in the pathogenesis

of tongue tuberculosis, or at the most the influence of this habit must be negligible.

It is likewise difficult to account for the age incidence. The ages of the majority of the reported cases have been in the early forties. This, together with the fact that most of the tongue lesions have been secondary to a pulmonary involvement, would suggest that the tongue is more prone to attack in the later stages of the disease and at a time when the resistance may be diminished.

#### REPORT OF A CASE

The patient, auto salesman, age 36, in the practice of Dr. W. A. Kickland, had suffered with pulmonary tuberculosis since he was 22 years of age (fourteen years). Four months before the tongue lesion developed he broke a tooth and bit his tongue with the remaining sharp fragment. A painful nodule appeared in the same area, which was on the right lateral surface, about one inch from the tip. Soon after the appearance of the nodule, another physician removed a portion, and reported the presence of acid-fast bacilli. The lesion was then cauterized with silver nitrate. The nodule persisted however, and two months later the lesion was removed surgically and the wound electrically cauterized. The area has been treated at intervals with the ultraviolet ray, and at the present time the patient appears to be making a satisfactory recovery, although it is probably too early to venture an ultimate prognosis.

*Pathology.* Sections were prepared from the tissue which was removed at the operation, and stained with hematoxylin and eosin. Others were stained with hematoxylin and Ziehl-Neelson's carbol fuchsin for the purpose of demonstrating any acid-fast organisms present. Sections were cut at different planes to facilitate a comprehensive study of the material.

Immediately beneath the mucosa there was a large irregular area of early ulceration or necrosis quite devoid of giant cells, and with no evident attempt at encapsulation (Fig. 1). Adjacent to this zone the muscle for a considerable depth was involved in a typical tuberculous process. The lesion consisted of tubercles which occupied the muscle bundles or fascicles and were rather sharply separated from each other by the remains of the perimysium (Figs. 2 and 3). Many of the muscle bundles contained only a remnant of muscle fibers which

were badly distorted due to the pressure exerted by the adjacent tubercles. The intermediate areas of some of the tubercles showed considerable accumulations of endothelial leucocytes with an occasional lymphocyte. In the extreme depths of the tissue a few muscle bundles had been replaced by collections of epithelioid (endothelial) cells without giant cell formation. These accumulations appeared to be very early tubercles, many of which were separated from the great zone of tubercles by bundles of normal muscle fibers indicating that perhaps the mode of extension of the infection was at least in part hematogeneous. The tubercles appeared to be of the same duration and fairly young as none showed caseation or calcification. A few of the tubercles showed only one giant cell, but the majority possessed two or three, and many five to seven (Fig. 3). Blood channels in the affected portion were few, and the perivascular infiltration noted by others was not observed.

Acid-fast bacteria of the morphology typical of the tubercle bacillus were demonstrated in a few of the sections stained with hematoxylin and carbol fuchsin. The organisms were located within the body of the giant cells and were very few in number.

#### DISCUSSION

From the history of the above case together with the pathologic findings there can exist no reasonable doubt that we were dealing with a case of tuberculosis of the tongue. The pathology also bears out the history that the lesion was of recent origin. The multiplicity of the tubercles, the majority of which were apparently of the same age, would indicate a rather massive inoculation, and a general susceptibility of the muscular fibers to the infection. While the original infection of the tongue undoubtedly resulted as a direct inoculation of the bite wound by the bacilli, there is some reason to think that part of the subsequent extension has been by way of the local blood vessels. It would be difficult to account for the young tubercle formations in the depth of the tissue by any other manner. The extension in the deeper portions by continuity would appear to be quite improbable.

The multiplicity of the tubercles and their widespread distribution even up to the edge of the line of incision, would cause one to doubt the likelihood of all the diseased tissue being removed. Consequently

the use of the cautery at the time of the operation and the subsequent employment of the violet ray were considered proper procedures.

#### SUMMARY

1. A review of the literature available since 1916, dealing with tuberculosis of the tongue is presented.

2. About fifty-two cases have been reported during the past  $\frac{7}{10}$  ten years. These added to those previously reported bring the total of cases up to 283.

3. The assembled data indicate that the disease is nearly five times as frequent in the male as in the female.

4. The average age incidence of the fifty-two cases reviewed is 42.7 years.

5. An original case is described.

The writer is indebted to Dr. W. A. Kickland, who kindly furnished the information necessary for the history of the case reported.

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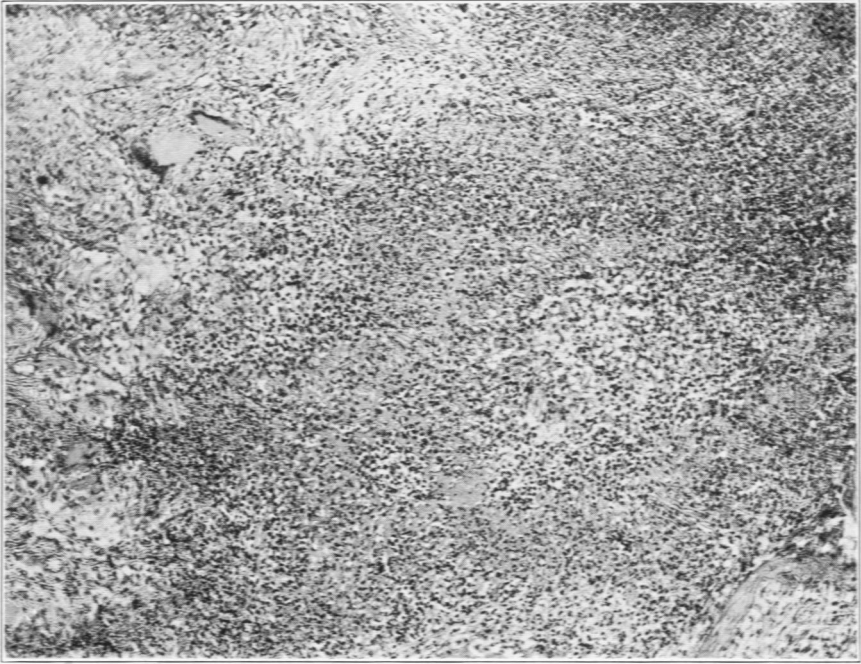
## DESCRIPTION OF PLATES

## PLATE 78

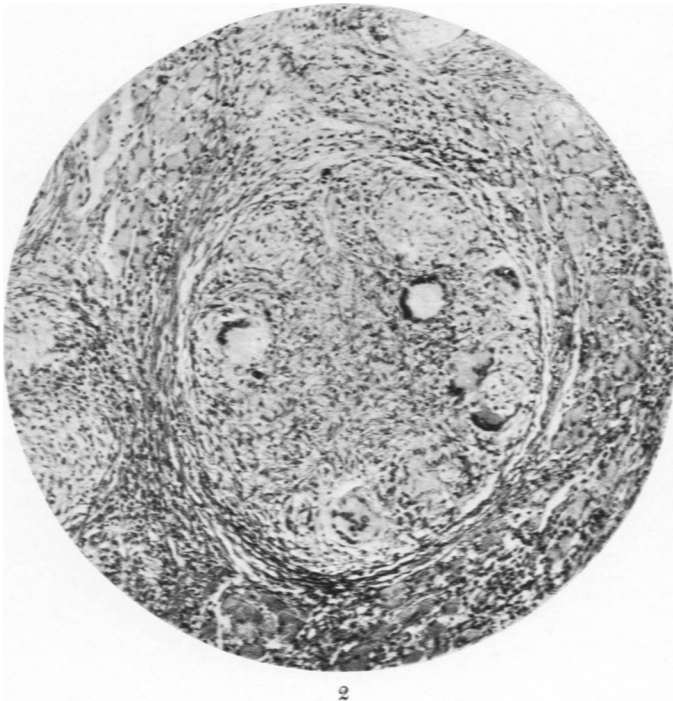
- FIG. 1. Tuberculosis of the Tongue. Low power view of an area in the sub-mucosa showing ulceration.
- FIG. 2. Tuberculosis of the tongue. Low power photomicrograph of a tubercle occupying the space normally occupied by a bundle of muscle fibres. Note the many giant cells and the sharp separation of the tubercle from the surrounding tissue.

## PLATE 79

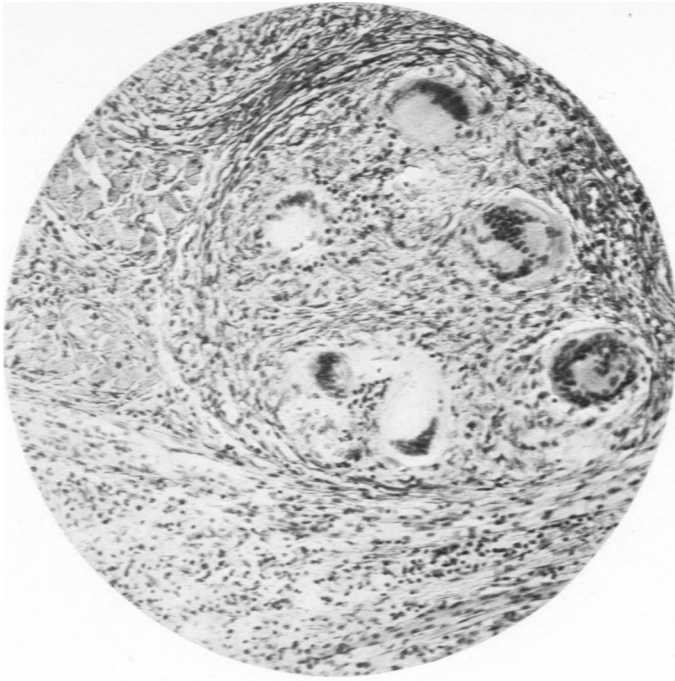
- FIG. 3. Tuberculosis of the tongue. Low power photomicrograph of a tubercle showing a large number of typical giant cells.
- FIG. 4. Tuberculosis of the tongue. High power photomicrograph of a giant cell.



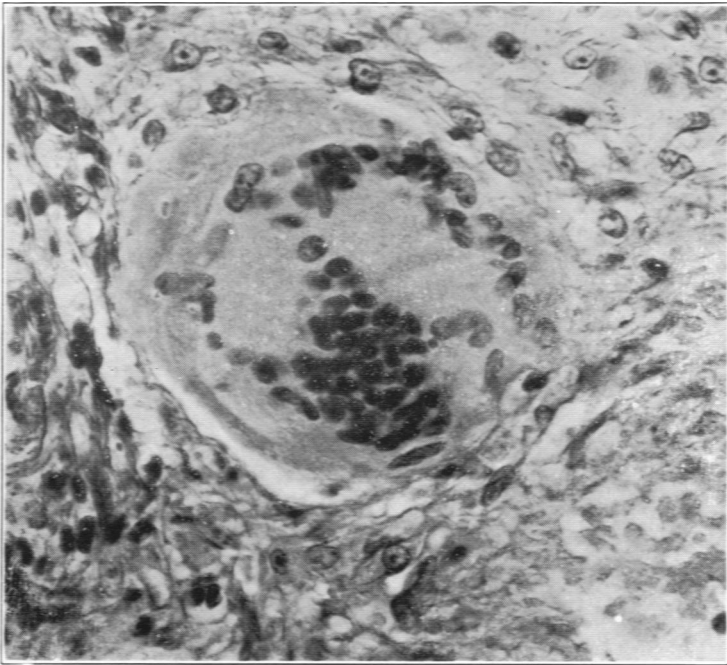
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