

## TUBERCULOSIS OF THE TONSILS \*

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Disagreement exists as to the mode by which the tubercle bacillus infects the faucial tonsils. Weller <sup>1</sup> studied 204 cases of active tonsillar tuberculosis and came to the conclusion that in 90 per cent of the cases the infection had arisen in the crypts. Usually the infection was unilateral and there was no obvious tuberculosis elsewhere in his patients. He described 16 cases in which the tubercles were located in the follicles, often in the germinal centers. Most of these were bilateral infections. Weller decided that the cryptal type of infection was primary (in the sense of exogenous) and the follicular type a secondary, blood-borne infection. The views of this investigator, based as they are on the histology of a large number of lesions, seem well grounded. That they are not universally accepted is shown by the statement of Hansel <sup>2</sup> that "both direct and indirect evidence make it probable that the tonsils are usually infected by the blood stream." Libin and Travushkina <sup>3</sup> stated that the difficulty of making a clinical diagnosis of tonsillar tuberculosis exists because the pathological process begins in the depths of the tonsil and that this origin is in favor of a blood stream infection. This last seems to be an unwarranted deduction since the crypts extend deeply into the tonsil and an infection originating at the base of a crypt would originate in the depths of the tonsil.

Schlittler <sup>4</sup> had previously examined 48 tonsils in a series of 89 cases of tuberculous lymphadenitis. He decided that these were examples of primary tuberculosis of the tonsil because (1) 73 per cent were unilateral, (2) 63 per cent of the patients were under the age of 12, (3) sputogenic infection seemed contraindicated by the clinical histories. Later, he reconsidered the facts after examining the tonsils in another series of 41 cases of tuberculous lymphadenitis. In this group most of the patients were over 12 years and the percentage of unilateral infection was lower. His final conclusion was that the majority of the cases were not primary but either post-primary or secondary hematogenic. The differences of opinion which exist have been commented on by Long, Seibert and Gonzalez <sup>5</sup> and the literature in this connection reviewed. They stated that Schlittler believes most infections to be hematogenous, but this overlooks Schlittler's post-primary group. The pathogenesis of tonsillar tuberculosis in cases of pulmonary disease chiefly interested Long and his associates. They

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studied a considerable number of cases and found that in open tuberculosis of the lungs the tonsillar infection was frequently bilateral and apparently originated in the crypts. There was nothing to support the hematogenic mode of infection. This is in agreement with the ideas of Weller.<sup>1</sup> The clinicopathological data on the cases studied in this present paper support Weller's views.

#### MATERIAL AND METHODS

In the 19,000 tonsillectomies done at the Henry Ford Hospital from 1922 to 1941 inclusive, there have been 35 cases of active tonsillar tuberculosis. At this clinic all tonsils are examined microscopically. A single section is cut at right angles to the mucosa through the long axis of the tonsil. The diagnosis of tuberculosis was made in those cases which showed typical active tubercles. All available clinical and laboratory data were collected and the morphological picture of the diseased tonsils was reviewed in an attempt to establish the pathogenesis for this series.

In this study the initial assumptions were that a cryptal infection is due to the passage of the tubercle bacillus through the mucosa (or possibly through ulcerations at the bases of the crypts); that tubercles found in relation to the follicles and germinal centers in the absence of relation to the crypts signify a hematogenous spread to the tonsil; that lymphatic spread can be ignored because the tonsil has no afferent lymphatics and retrograde spread is unlikely. The results of the study were not such as to require alteration of the assumptions. The following classification was used:

1. Unilateral
  - A. Cryptal
    - (1) Primary (by inhalation or ingestion)
    - (2) Post-primary (by inhalation, ingestion, or sputum)
  - B. Follicular
2. Bilateral
  - A. Cryptal
    - (1) Primary
    - (2) Post-primary
  - B. Follicular

The number of cases in each category and the distribution of the cases by serial numbers are shown in Table I.

#### UNILATERAL INFECTIONS WITHOUT PULMONARY TUBERCULOSIS

*Case 1.* A child, 3 years old, was admitted with a history of frequent bouts of upper respiratory infection since the age of 2. No exposure to tuberculosis known. X-ray studies showed hilar tuberculosis and Pott's disease of the seventh dorsal vertebra. Tonsillectomy disclosed a unilateral cryptal infection.

*Case 5.* A girl, 13 years old, was admitted with an enlarged node on the right side of the neck of 3 years' duration. There had been a sudden increase in size 3 months previously. No history of tuberculosis. Tonsils were enlarged and scarred. The child had been examined previously at another hospital and all findings, including roentgenograms of the chest, were negative. There was a nontender, non-fluctuant node on the right side of the neck, about the size of a hickory nut. Tonsillectomy was done on November 9, 1931. There was a unilateral cryptal tuberculosis. The patient was seen again in 1941, at which time she seemed to be in good health.

TABLE I  
*Distribution of Cases According to Subdivisions of the Classification*

Classification*	Number of cases	Case numbers†
1.	27	1, 5, 6, 7, 8, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35
1.A.	20	1, 5, 6, 7, 8, 11, 12, 13, 14, 15, 18, 20, 23, 24, 25, 26, 28, 29, 30, 31
1.A.(1)	15	1, 5, 6, 7, 8, 11, 12, 14, 18, 23, 24, 25, 29, 30, 31
1.A.(2)	5	13, 15, 20, 26, 28
1.B.	None	None
2.	8	2, 3, 4, 9, 10, 16, 22, 32
2.A.	6	3, 9, 10, 16, 22, 32
2.A.(1)	3	3, 9, 32
2.A.(2)	2	10, 16
2.B.	2	2, 4

\* The notations under this heading refer to the classification given in the text.

† Of the 27 cases of unilateral tuberculosis only 20 can be completely classified. The remaining 7 are cases 17, 19, 21, 27, 33, 34 and 35. Whether cases 17, 19, 27, 33 and 35 were cryptal or follicular could not be determined. Both tonsils were removed in case 21, but only one reached the laboratory. Case 34 is probably 1.A.(1) but the clinical information is incomplete. One of the bilateral infections, case 22, could not be completely classified because of lack of evidence. Probably it falls under 2.A.(1).

*Case 6.* A child, 6 years old, was admitted for a routine tonsillectomy. There was no history of exposure to tuberculosis. Tonsillectomy was done on May 22, 1929. There was a mild unilateral cryptal infection. Roentgenograms of the chest on June 24, 1929, were negative; those of June 28, 1930, showed enlarged hilar nodes. On September 17, 1932, roentgenograms of the chest showed a widened hilar shadow but no calcified nodes; those of November 4, 1933, were similar, and on October 19, 1935, a tubercle of Ghon was seen in the right fourth interspace. Throughout this time the child remained in good health.

*Case 7.* A child, 9 years old, was brought in at the request of school authorities for a routine tonsillectomy and adenoidectomy. Physical examination was essentially negative and the lungs were stated to be negative. The tonsils were enlarged and the anterior cervical nodes palpable. Tonsillectomy was done on January 19, 1931. Microscopically there was a cryptal infection in one tonsil. The other was uninvolved. The child was not seen again at this clinic.

*Case 8.* A white girl, 18 years old, was first seen on February 20, 1926, complaining of large nodes at the angle of the jaw on the left side of 4 months' duration. Physical examination was essentially negative. Tonsillectomy on February 23, 1926, disclosed an extensive cryptal infection in one gland. Shortly afterward she developed a draining cold abscess on the left side of the neck. In 1938 she was in fairly good health and the infection was quiescent. There was never any evidence of pulmonary tuberculosis.

*Case 11.* A white boy, 27 months old, was brought in because of cervical adenitis of 3 weeks' duration. An uncle had osseous tuberculosis. A brother, 10 months of age, had died of "mucous colitis" a few weeks previously. The child showed an enlargement of the entire group of right cervical lymph nodes without redness, pain, or fluctuation. Tonsillectomy on April 4, 1927, disclosed a unilateral cryptal infection. Roentgenograms on May 3, 1927, were read as showing no hilar enlargement or parenchymal involvement. On March 9, 1928, one of the nodes on the right side of the neck was incised and a tuberculous abscess found. Roentgenograms on January 24, 1929, showed hilus enlargement but no definite tuberculosis.

*Case 12.* A white girl, 6 years old, was brought in for routine tonsillectomy. The history and examination were negative. Tonsillectomy on October 23, 1926, disclosed a mild unilateral cryptal infection. Roentgenograms on November 4, 1926, showed a calcified node in the neck on the right side, as well as some calcified hilar nodes.

*Case 14.* A white boy, 5 years old, was brought in because his father thought that he should have his tonsils removed. He had always been healthy. General physical examination was negative. Tonsillectomy was done on August 18, 1927. Microscopically there was a unilateral cryptal tuberculosis. The child was seen again for a recheck on September 14, 1927, and the lungs were stated to be negative.

*Case 18.* A child, 5 years old, was admitted whose mother had shown a positive sputum on several occasions. Roentgenograms on December 13, 1934, showed calcification in the right hilus and possibly in the parenchyma on the right. Tonsillectomy on January 3, 1935, disclosed a severe localized unilateral infection. This child was last seen in 1941, at which time there were areas of calcification in the hilus but no evidence of parenchymal disease.

*Case 23.* A white girl, 20 years old, came in with the complaints of bronchitis, chronic cough and lack of energy. Physical examination was essentially negative except for deflected septum and hypertrophic tonsils. Tonsillectomy was done on November 16, 1929. Microscopically there was a unilateral cryptal infection. Some of the tubercles had a little central necrosis but there was no caseation. The patient did not return for a recheck.

*Case 24.* A boy, 4 years old, was admitted whose father had pulmonary tuberculosis. On December 7, 1931, the child gave a positive reaction to 1/10 mg. O.T. A roentgenogram made on the same day showed hilar accentuation which was not definitely tuberculous. Tonsillectomy was done on May 6, 1932. There was a mild unilateral cryptal infection. On March 10, 1933, a cold abscess ruptured in the right groin.

*Case 25.* A white man, 27 years old, was admitted for pain in the back and stomach. Tonsillectomy was done in 1929 and a unilateral cryptal infection was found. He was not seen again until 1937; roentgenograms taken at that time showed calcified nodes in the left hilar area. There was no clinical tuberculosis.

*Case 27.* A child, 5 years old, was admitted who was poorly developed and nourished. Her mother had died with pulmonary tuberculosis. Physical examination showed large nodes at the angles of the jaw but the lungs appeared clear. The child had a positive tuberculin reaction, and roentgenograms showed increased hilar density. Tonsillectomy was done on July 23, 1928. Microscopically a proliferative tuberculous lesion was present in one tonsil but a definite relation to either crypts or follicles could not be established.

*Case 29.* A girl, 6 years old, was brought in because of a limp in the right leg of 2 weeks' duration. There was restricted rotation and adductor spasm. The tonsils and cervical lymph nodes were enlarged. She was treated for tuberculosis of the hip. On April 11, 1939, tonsillectomy showed a unilateral cryptal tuberculous infection. Several roentgenograms showed hilar enlargement but no parenchymatous lesions of the lungs.

*Case 30.* A white boy, 3½ years old, was admitted who had been followed in the clinic since the age of 6 weeks. No exposure to tuberculosis was known. There had been frequent attacks of otitis media. On February 21, 1934, tonsillectomy was done. There was a unilateral cryptal infection. Roentgenograms on May 23, 1934, showed hilar accentuation; those on November 27, 1936, showed a similar appearance.

*Case 31.* A boy, 8 years old, was admitted whose mother had active pulmonary tuberculosis. She brought the boy into the hospital because she thought that he had chickenpox. The lesions were insect bites, however. Tonsillectomy was done on December 9, 1929. There was a unilateral cryptal infection. Roentgenograms on February 10, 1930, showed calcified nodes in the right hilus; those on January 13, 1941, showed a similar picture.

*Case 33.* Tonsillectomy was done on a white male, 22 years old, on March 29, 1924. Microscopically one of the tonsils showed a proliferative tuberculous lesion, but it could not be related definitely to crypts or follicles due to the way the section was cut. Patient was called in for a recheck. The chest was found to be negative. Roentgenograms were advised but the patient refused.

*Case 34.* A patient, 31 years old, came in with complaints of stomach ulcer. There was no family history or past history of tuberculosis. The lungs were negative; tonsils were slightly enlarged, and cervical lymph nodes were palpable. Tonsillectomy was done on January 31, 1930. Microscopically there was a unilateral cryptal infection. No further studies were carried out.

### *Discussion*

Cases 1, 5, 6, 7, 8, 11, 12, 14, 18, 23, 24, 29, 30 and 31 are most easily interpreted as primary tuberculosis of the tonsils. In some instances the available data suggest the possibility of bovine organisms as the infecting agents. Case 25 is less clear owing to the age of the patient. Data on cases 27, 33 and 34 are incomplete.

### UNILATERAL INFECTIONS WITH PULMONARY TUBERCULOSIS

*Case 13.* A white woman, 58 years old, was admitted complaining of bone and joint pain. Many years ago she had had an attack of pleurisy. Tonsillectomy was done on May 10, 1927. There was extensive scarring of both tonsils with unilateral cryptal tuberculosis. Patient was called in for a recheck and on June 14, 1927, roentgenograms showed thickening and infiltration of the right apex, probably tuberculous.

*Case 15.* A white woman, 36 years old, was admitted complaining of chronic backache. Tonsillectomy was done on December 1, 1927. There was a unilateral cryptal infection. Roentgenograms of the lungs on December 16, 1927, showed calcified hilar nodes and probable cavity at the right apex. There were râles in the right apex posteriorly. Treatment was undertaken at home. Roentgenograms on May 7, 1937, showed inactive parenchymal lesions in the right apex.

*Case 17.* A white man, 25 years old, was first seen on April 29, 1924, with the complaint of hoarseness of 2 months' duration. This had followed an attack of tonsillitis or sore throat. Physical examination was essentially negative except for slight enlargement of the cervical lymph nodes. Pus could be expressed from the upper pole of the right tonsil. Tonsillectomy was done on May 5, 1924. Microscopically there was a unilateral infection consisting of one tubercle with a necrotic, partially caseous center. The specimen was too distorted to determine whether it was related to the crypts. The tonsils were extensively scarred. Re-examination of the chest showed signs of active tuberculosis, and roentgenograms on May 23, 1924,

showed an extensive bilateral parenchymatous infiltration, with a large cavity on the left side. The patient was not seen again.

*Case 19.* A white man, 29 years old, came in complaining of sore throat and frequent attacks of tonsillitis. There was no history of tuberculosis in the family. Physical examination showed a partial stricture of the nasopharynx but no positive findings in the lungs. Tonsillectomy and plastic operation were done on January 3, 1924. Microscopical examination showed a diffuse epithelioid reaction with giant cells in one tonsil, without caseation or necrosis. The section did not include any crypts. A relation to germinal follicles could not be made out. The tissue from the nasopharynx showed extensive productive tuberculosis. Roentgenograms in 1926 showed evidence of apical pleuritis with thickened pleura at the right base.

*Case 20.* A white boy, 8 years old, was admitted with no history of exposure to tuberculosis. Tonsillectomy was done on April 20, 1927, following which he did not do well. There was a unilateral cryptal infection. On May 3, 1927, a few fine râles were heard in the left interscapular region. Roentgenograms on May 5, 1927, showed an area of consolidation in the midportion of the left lung with hilar enlargement and infiltration of both upper lobes.

*Case 21.* A white girl, 5 years old, had been followed since early infancy. A roentgenogram taken on August 30, 1930, showed a small but definite amount of fibrosis in the right upper lobe. Tonsillectomy was done on September 9, 1930. Both tonsils were removed but only one reached the laboratory. This showed a localized cryptal infection. Roentgenograms on September 28, 1931, showed some accentuation of the hilar areas and an area of increased density in the right upper lobe which appeared to be tuberculous.

*Case 26.* A white man, 37 years old, was referred to the hospital for tonsillectomy. Operation was done on March 25, 1937. There was a unilateral cryptal infection. Roentgenograms on November 9, 1937, showed multiple lesions in both upper lobes. The sputum was positive for tubercle bacilli and there was an early laryngeal tuberculosis.

*Case 28.* A white female, 24 years old, was given a routine physical examination on February 10, 1931, which disclosed no abnormalities. Tonsillectomy was done on December 22, 1933, and unilateral cryptal tuberculosis was found. She was called in for a recheck and gave a history of fatigue and loss of weight. Roentgenograms on January 26, 1934, showed bilateral parenchymatous lesions with a probable cavity on the left side.

*Case 35.* A white man, 20 years old, was a known case of pulmonary tuberculosis. Tonsillectomy on November 3, 1923, showed a unilateral infection, but due to the poorness of the section the morphological type could not be diagnosed. This patient was known to have sputum positive for tubercle bacilli.

### *Discussion*

Four of these cases were active and probably open, so the sputogenic origin of the tonsillar lesion seems fairly certain. Case 13 was apparently neither active nor open. Assuming this to be true, it must have been a post-primary exogenous infection. This should not seem strange, in view of the ubiquity of the organism and the frequency of tonsillar erosions. From the scarred appearance of the tonsils in this case it might be guessed that there had been previous infections, some of which could have been sputogenic. Data on cases 17, 19, 21 and 35 are incomplete.

## BILATERAL CRYPTAL INFECTIONS

*Case 3.* A colored child, 14 months old, was nursed for a short time by his mother who died of pulmonary tuberculosis 3 months after his birth. There were enlarged cervical, inguinal and axillary lymph nodes. Tonsils were enlarged. Roentgenograms on June 30, 1931, showed enlarged hilar nodes. Tonsillectomy on September 30, 1931, showed a bilateral cryptal tuberculosis.

*Case 9.* A white woman, 24 years old, complained of an ache in the upper chest and shoulders following an attack of tonsillitis. Physical examination was essentially negative except for chronic tonsillitis and enlarged cervical nodes. Tonsillectomy was done on August 15, 1924. Microscopically there was a widespread bilateral infection arising in the crypts. The patient was called back for a recheck but no evidence of extratonsillar tuberculosis was found. However, roentgenograms were not made.

*Case 10.* A white man, 30 years old, complained of a "run-down" feeling, and pain below the shoulder blade on the right side. There was impairment to percussion in the same region. Roentgenograms showed an extensive, radiographically inactive, infiltration of both upper lobes. Tonsillectomy was done on October 1, 1925. There was a bilateral cryptal infection.

*Case 16.* A white male, 29 years old, complained of chills, fever and night sweats over a period of 6 months. There were moist râles in the left interscapular region. Roentgenograms on February 16, 1929, showed active parenchymatous changes in the right upper and middle lobes. Tonsillectomy was done on March 4, 1929. There was a heavy infection arising in the crypts of both tonsils. The patient died elsewhere a few months later.

*Case 22.* A boy, 12 years old, was brought in for a routine tonsillectomy. There was no family or personal history of tuberculosis. Physical examination was negative except for large and injected tonsils and palpable cervical nodes. Tonsillectomy was done on March 19, 1928. There was a bilateral cryptal infection with much scarring. The patient did not return for a recheck.

*Case 32.* A white woman, 22 years old, had been followed because of a gynecological complaint for about 1 year when an examination of the chest showed an enlargement of the retrosternal dullness. On March 20, 1925, roentgenograms showed a large rounded nodule in the right hilus. The impression was lymphosarcoma. She was given x-ray therapy and roentgenograms on May 29, 1925, showed that the circular shadow had almost disappeared. On November 16, 1925, she had a severe attack of tonsillitis. About 3 months later a huge cervical lymph node had developed. There was no general glandular enlargement. Specimen taken for biopsy of this node showed tuberculosis. Tonsillectomy on May 20, 1926, showed a massive bilateral infection clearly arising in the tonsillar crypts. Following the excision for biopsy a draining sinus developed which persisted for many years.

*Discussion*

Case 9 appears to be the result of a heavy infection by the oral route, which could have come from infected milk or some similar source. Case 32 also seems to be an oral infection, interesting because of the severe degree of lymphadenopathy, and similar in many respects to case 3. Because of lack of evidence, case 22 cannot be commented upon. Some or all of these four cases may have been due to a bovine type of infecting organism. Mitchell<sup>6, 7</sup> isolated the bovine organism 65 times and the human organism 7 times in a series of tuberculous

cervical nodes. In 26 cases of tuberculous tonsils he found the bovine type 20 times. Case 16 is clearly, and case 10 probably, of sputogenic origin. Long, Seibert and Gonzalez,<sup>5</sup> in the study of 81 cases of tonsillar tuberculosis, secured roentgenograms on 35 patients and found active pulmonary tuberculosis in 18 (16 of the adult type, 2 of the childhood type). The infection in these tonsils appeared to originate in the crypts. However, Long and his associates had a small series of "closed" cases where the histological picture was similar to that seen in the "open" cases. The mechanism of infection was uncertain. Possibly they may have been post-primary infections with no relation to the pulmonary lesions.

#### BILATERAL FOLLICULAR INFECTIONS

*Case 2.* A white male, 33 years old, was first seen on December 24, 1932, 1 month after an attack of sudden weakness, chilliness and sweating. Following this he continued to feel weak and tired, ran an irregular fever and lost 11 lbs. Physical examination was essentially negative. The tonsils were small. Innumerable laboratory studies were done without finding the source of the trouble. Tonsillectomy was done on January 11, 1933. He left the hospital and, in another city, shortly developed a severe sloughing infection of the tonsillar beds, necessitating hospitalization for several days. The patient was not seen again at the hospital, but in 1939 he wrote asking that his clinical history be forwarded to the physician who was treating him for a "recurrence of his trouble." The tonsils in this case showed many small tubercles located near, and in some cases in, the germinal follicles. There was no apparent relation to the crypts.

*Case 4.* A white boy, 4 years old, was first seen on June 22, 1931, with complaint of loss of appetite and persistent pain on the left side of the chest. An uncle, who had lived with the family in constant contact with the patient, had died recently of advanced pulmonary tuberculosis. On admission to the Henry Ford Hospital the tonsils and cervical nodes were moderately enlarged. A few fine râles were heard over both upper lobes. Roentgenograms on June 30, 1931, showed accentuated hilar areas, enlarged nodes in the left hilus and suggestive evidence of a cavity at the left base; those on August 4, 1931, showed evidence of consolidation at the left base. Tonsillectomy was done on March 16, 1932. There was a bilateral infection with hard tubercles located near and in the germinal centers. In some areas there was a nonspecific follicular necrosis. Roentgenograms on July 8, 1932, showed no definite parenchymatous changes although there was suspicious infiltration of the hilar areas.

#### *Discussion*

The history in case 2 is quite compatible with the histopathological finding of a follicular infection. In case 4 conditions favorable for a sputogenic infection may have been present, yet blood stream infection took place instead. Under similar conditions a mixed cryptal and follicular infection might occur.

#### GENERAL DISCUSSION AND SUMMARY

*Relation of Tonsillar Tuberculosis to Tuberculosis of Cervical Nodes.* Blatt and Greengard<sup>8</sup> stated that whereas some authorities believe tuberculosis of the cervical nodes to be almost invariably due



to bovine organisms with the tonsil as the portal of entry, they, on the contrary, lean to the belief that it occurs most commonly as a result of primary aerogenous infection of the lungs with secondary involvement of the intrathoracic nodes, followed by direct extension to the deep and superficial cervical nodes. Unless I carry the process one step further and assume that the tonsils are infected through the cervical nodes, it would be difficult to explain my cases. Such a retrograde lymphatic infection of the tonsil seems unlikely. Case 8 clearly suggests a sequence of infection from the tonsil to the cervical nodes, as do cases 11 and 5.

*Tonsillar Tuberculosis and Hilar Tuberculosis.* On the other hand it is possible that the mechanism suggested by Blatt and Greengard<sup>8</sup> takes place in reverse, so that the infection may travel from the tonsils to the cervical nodes, thence to the hilar and even to the retroperitoneal nodes. Cases 3, 12, 18, 24, 31 and 32 are in point here.

*Tonsillar Tuberculosis and "Open" Pulmonary Tuberculosis.* It would appear highly probable that most tonsillar infections in this group are sputogenic. A few cases of hematogenic infection will occur also. When the pulmonary lesion is "closed" and the pathological picture in the tonsil is that of a cryptal infection, the dilemma is resolved by postulating a post-primary exogenous infection of the tonsil independent of the lesion in the lung, or a reawakening of a slumbering infection incurred at a time when the pulmonary lesion was temporarily "open."

*Hematogenic Tuberculosis of the Tonsils.* Weller<sup>1</sup> found 16 of 204 cases to be of this type. In this series there are 2 out of 35 (or 28, if the doubtful cases are omitted). Apparently cases of hematogenic infection are considerably in the minority.

*Primary, Post-primary and Hematogenic Infections.* In this series, 18 cases (1, 3, 5, 6, 7, 8, 9, 11, 12, 14, 18, 23, 24, 25, 29, 30, 31, 32) have been interpreted as primary; 7 cases (10, 13, 15, 16, 20, 26, 28) as post-primary sputogenic; 2 cases (2, 4) as follicular. The remainder are more or less uncertain for various reasons.

*Pathogenesis of Tonsillar Tuberculosis.* Cryptal infections are due to the passage of the bacillus through the intact or eroded mucosa of the base of the crypt. Tubercles related to the follicles and germinal centers are hematogenous. Lymphatic spread can be ignored because the tonsil has no afferent lymphatics and retrograde lymphatic spread is unlikely.

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