

## TUBERCULOSIS IN SOME RARE SITUATIONS, NAMELY TONSILS AND UTERUS

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OUR choice of the title of this paper is not a very happy one, but may be justified on the ground that its splitting would reduce the papers to very small dimensions.

### PART I

#### Incidence and Histopathology of Tonsillar Tuberculosis

Tuberculosis of the tonsils is by no means a common condition, Mullin (1923), for example, in analysing 400 tonsillectomies found only 4.25 per cent cases of tuberculous tonsils.

The present study is based on 2,477 tonsillectomies in the Madras General Hospital. This

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series covers a period of five years from January 1928 to December 1932. We, however, feel that this investigation is incomplete in many respects; for example, there are no clinical details, and no bacteriological examination was made of the tonsils. It would undoubtedly have been more valuable if the incidence of the various types of *B. tuberculosis* had been worked out. But situated as we are, we could not carry out such enquiries. A very large number of persons come to the outpatient department and the patients leave the hospital soon after the operation. These tonsils are sent to the laboratory without any clinical history. We fully realize that information regarding the condition of the lymph nodes and the lungs would have been extremely useful inasmuch as it would have enabled us to establish the relationship between the incidence of tuberculous tonsils and tuberculosis of other parts of the body. As a very large number of tonsils are received for examination, no special investigations were carried out and only histological examinations were made. As will be seen in the table, only a very small proportion of the tonsils show histological evidence of tuberculosis. As this lesion is not recognizable clinically, it would have been necessary to submit thousands of the tonsils to bacteriological examination, such as animal inoculation and cultural tests. Such an investigation besides being very expensive would have entailed an enormous amount of labour.

#### Naked-eye examination

The tonsils were carefully examined before they were sectioned but in no case was it possible to identify the tonsil as tuberculous before it reached the microscope. The tonsils which turned out to be tuberculous on histological examination did not show any difference in size, colour, or appearance from the non-tuberculous ones. Fordyce and Carmichael (1914) have often found these tonsils to be small, ragged and atrophic. Though such an appearance was not noted in our series of cases, tonsillar tuberculosis being chronic in type and leading to fibrosis, one would naturally expect them to be small in size as the result of the contraction of fibrous tissue. It may be that in none of the cases of the present series had the fibrotic process advanced far enough to cause shrinkage. No case of ulceration was seen; even tonsils showing histologically an advanced degree of tuberculosis were free from it.

#### Histological examination

In the following paragraphs, the histological appearances of the tonsils in a few cases are described:—

*Case I.*—(Section No. 3910). The section shows a number of discrete typical tuberculous follicles under the squamous epithelium which is nowhere destroyed. These follicles which are situated in between the hyperplastic germinal centres consist of clusters of endothelioid cells which are also known as epithelioid or

reticular cells and giant cells with a peripheral zone of small lymphocytes. There is no necrosis of the central zone and there is no increase of fibrous tissue.

*Case II.*—(Section No. 5040). The tuberculous follicles in this section are seen to have become confluent. Giant cells are also seen. Under the surface epithelium numerous hyperplastic germinal centres are noticed. The reticular cells and giant cells are situated deep down near the capsule which is thickened. There is marked infiltration of the tonsil with plasma cells. There is necrosis as shown by the loss of the cellular outlines of the reticular cells. There is no increase of fibrous tissue. This appears to represent a more advanced stage than the last section.

*Case III.*—(Section No. 4820). This section presents the appearance of formative or proliferative type of tuberculosis as seen in the lymph nodes. There are a number of cellular areas which stain differently from the rest of the tonsillar substance, i.e., they are eosinophilic. Under high magnification these cell groups are found to consist of reticular cells. There are no giant cells and the lymphocytic peripheral zone is also not very prominent. There is no necrotic change in the reticular cells. The germinal centres appear normal in size. There is a considerable increase of fibrous tissue.

*Case IV.*—(Section No. 5768). There are a few typical tuberculous follicles in contact with the surface epithelium, separated from one another, showing a slight amount of necrosis. There is an enormous increase of fibrous tissue in the tonsillar substance. Lymphoid tissue is atrophied.

*Case V.*—(Section No. 5316). The surface epithelium is much thinned out but not broken through. There is a diffuse hyperplasia of reticular cells without any definite follicular arrangement, amongst which a number of giant cells are seen. There is no evidence of fibrosis or caseation. The germ centres are atrophied.

*Case VI.*—(Section No. 4932). Numerous tuberculous follicles, some of which are confluent and others discrete. The germ centres are very active and no giant cells are seen.

*Case VII.*—(Section No. 3424). Numerous confluent areas of hyperplastic reticular cells; no necrosis or fibrosis.

*Case VIII.*—(Section No. 9042). Many tuberculous follicles; no necrosis or fibrosis.

*Bacteriological examination*

All the sections were stained by Ziehl-Neelsen's method and examined for *B. tuberculosis*, but in no case were these found.

*Discussion*

In 2,477 cases (males 1,249 and females 1,228) in which operation was performed for removal of the tonsils, histological evidence of tuberculosis was found in 15 cases, or 0.6 per cent of all cases. The percentage incidence of tuberculous tonsillitis in males was 0.4 and in females 0.8. According to age and sex, the incidence is as follows :—

Age	NUMBER OF CASES	
	Males	Females
1 to 5 years ..	nil	1
6 to 10 " ..	3	1
11 to 15 " ..	nil	nil
16 to 20 " ..	2	5
21 or over " ..		3

There were 10 females and 5 males, a proportion of 2 females to 1 male. The disease is

definitely much more frequent in females than in males after 15 years of age. This appears to be in accord with the observation made by many workers in India that pulmonary tuberculosis is more common among females than males. The maximum incidence is between the ages of 16 to 20. The youngest patient was 5 years of age and the oldest 26 years of age. Both were females.

It may be noticed that no case of tuberculous tonsillitis was found between the ages of 11 to 15 years but this is probably without any significance.

*Histopathology.*—The tuberculous process begins in the form of one or two discrete tubercles beneath the epithelium of surface and crypts. These gradually enlarge, become confluent, and extend into the substance of the tonsil until a great part of it is replaced by tuberculous tissue. It is a noteworthy fact that though the tubercles may lie near the epithelium they never actually invade it and it is for this reason that ulceration does not occur. It may also be noticed that caseation is not a very important feature of tonsillar tuberculosis. In only two cases was evidence of commencing necrosis found, but it was not at all marked. In most of the cases, proliferation of the reticular cells and fibroblasts was very pronounced. It is not possible to explain the remarkably different character of the tuberculous lesion of tonsils—different from that of the lymph nodes, for example, which undergo extensive caseation. It may be that the proliferative type and the fibrotic type of tuberculosis are met with in those tissues which are resistant to the destructive action of the bacilli and their toxins. Situated as the tonsils are in the common portal of entry to the respiratory and gastro-intestinal tract they are presumably infected with *B. tuberculosis* in a great many cases, but, as they withstand the action of the tubercle bacilli so well, they seldom present clinical evidence of the lesion. Histological evidence points to the fact that the ultimate tendency of the tuberculous lesions in the tonsils is towards recovery. In the routine examination of the tonsils, we have come across numerous instances in which widespread fibrosis was present and these might well represent an extinct tuberculous infection though, of course, there are no means of confirming this. Tuberculous infection may spread to the peritonsillar tissues causing peritonsillitis, which is clearly seen in our case II.

The material for this study came into our hands through the courtesy of Mr. P. V. Cherian, F.R.C.S.E., to whom our thanks are due.

**PART II**

**Histopathology and Clinical Features of Tuberculosis of Uterus**

*Reports of cases*

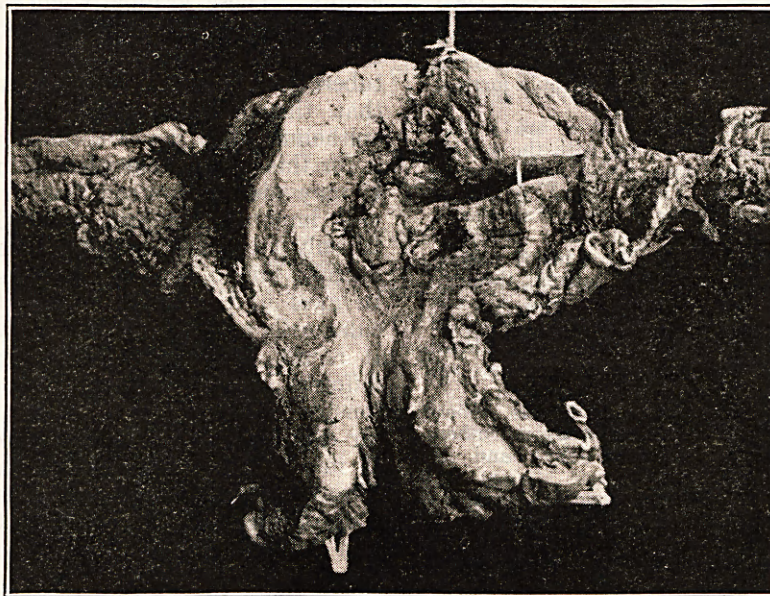
*Case I. Clinical history.*—Patient M, female, aged 25 years, was admitted into the Clough Memorial

Hospital, Ongole, with a complaint of prolapse of the uterus (duration two years) and serosanguineous discharge (duration six months). On examination there was ulceration of the cervix unlike that due to carcinoma. At operation, the peritoneal surface was covered with fine nodules but the absence of any primary tumour was against the diagnosis of carcinomatosis. The pouch of Douglas was obliterated by adhesions. The Fallopian tubes and ovaries were adherent to a mass of tissue. One of the tubes showed definite tubercles. The uterus along with the adnexa of both sides were removed.

*Naked-eye examination.*—On opening the uterus a soft raised ulcerated mass is found in the fundus and body of uterus without any extension to servix (Fig.). The uterus is normal in size and soft.

*Case II. Clinical history.*—Patient D, female, aged 25 years, gained admission to the Clough Memorial Hospital, complaining of leucorrhœa and amenorrhœa of two years' duration. There was no disease of the lungs. A fluctuant fixed mass was felt in the right groin, believed to be a cold abscess resulting from the breaking down of tuberculous groin glands. An irregular ulcerated soft mass was protruding from cervix with no special tendency to bleeding. At operation, the tubes and ovaries presented the picture of advanced pelvic inflammatory disease. The adnexa of both sides were removed with the uterus, including the cervix and a small cuff of vagina. There was a profuse discharge from the cervical canal during operation. The patient died three days later with the evidence of general septic peritonitis.

*Microscopical examination.*—(Section No. 1542). Section of cervix shows ulceration of



An irregularly raised mass is seen occupying the fundus of the uterus.

*Microscopical examination.*—(Section No. 2358). Under low power there is thickening of the endometrium. In one part of the section the uterine glands are absent and the endometrium is replaced by tuberculous granulation tissue. The surface epithelium is ulcerated. In other areas the glands appear normal without any hyperplastic changes. A few of the glands are distended and the lumen contains a hyaline secretion and a good number of large oval cells with a clear cytoplasm and peripheral nucleus. There are commencing areas of necrosis as seen by loss of cellular outline. There is no definite caseation. Giant cells of Langhans' type are present. There is marked infiltration of stroma with plasma cells and lymphocytes. There is neither stratification of glandular epithelium nor obliteration of the lumen. The myometrium shows definite tuberculous follicles between the muscle bundles but without caseation. The blood vessels show endarteritis obliterans.

surface epithelium, the cervical mucous membrane being almost entirely replaced by tuberculous granulation tissue with many giant cells. A few atrophic glands are seen. The muscular layer shows many tuberculous follicles and round cells. The blood vessels show definite endarteritis obliterans. Both ovaries are free from tuberculosis.

*Case III. Clinical history.*—Patient C, female, aged 23 years, married, has three children, the last child was born 2 years and 6 months before the date of admission to the hospital. She entered the Government Women and Children Hospital, Madras, on 25th January, 1935, complaining of pain on the right side of lower abdomen for four days, and fever of fifteen days' duration. For one year she has been having regular, painful and profuse periods, lasting for nine days. She has been suffering from leucorrhœa for the last two years. On examination, the cervix was found to be eroded, and the uterus slightly bigger than normal, and firm. There was tenderness in the region of the left Fallopian tube. The right ovary was palpable. It was diagnosed as a case of sub-involution and salpingitis. On 9th February

the uterus was dilated and curetted. On 21st February total hysterectomy was done and the tubes were found to be thickened and nodular. The ovaries were found to be covered with fine tubercles.

*Naked-eye examination.*—No gross lesion is found in the uterus or appendages.

*Microscopical examination.*—(Section No. 333). A section of the uterus shows the endometrium to be normal. There are typical tuberculous follicles situated in between the muscle bundles in close relation to blood vessels. There is no necrosis. A section of the ovary shows a large follicular cyst, but there is no evidence of tuberculosis. The wall of the Fallopian tube is slightly fibrotic and shows general thickening of the mucous membrane. The epithelium is intact. The serous surface shows a tuberculous nodule consisting of confluent tubercles. The central necrosis is well marked. The lumen of the tube is obliterated by the proliferation of the epithelium.

*Case IV. Clinical history.*—Patient K, female, aged 20 years, was admitted to the Government Women and Children Hospital, Madras, on 17th July, 1935. She was married seven years before the date of admission and one year later had a child. She complained of white discharge *per vaginam* since the birth of her child, and slight bleeding for one year. The periods were regular but very scanty, lasting only for one day, and she complained of slight pain in the back during the periods. On examination, there was a small the ulcerated cauliflower-like growth on the right side of the cervix, which easily bled on manipulation. The growth extended to the anterior fornix of the vagina. On 29th July total hysterectomy and right salpingo-oophorectomy was done. A few nodules on the uterus, right Fallopian tube and on the intestines were noticed. The right ovary contained a hæmorrhagic cyst of the size of a lime.

*Microscopical examination.*—(Section Nos. 1735 and 1736). Section of the cervix showed typical tuberculous follicles situated in the stroma between the glandular acini. There is no evidence either of necrosis or of hyperplasia of the glandular epithelium. Section of growth from the anterior fornix showed tuberculous granulation tissue.

*Case V. Clinical history.*—Patient S, female, aged 25 years, had a child five years before the date of admission to St. Martin's Hospital, Ramnad. Her chief complaint was leucorrhœa and amenorrhœa of two years' duration. The cervix was eroded and bled readily when touched. The uterus was normal in size and position. The surgeon was inclined to think that the appearance of the cervix was not that of a typical erosion and he removed a wedge-shaped slice of the cervix bearing the erosion.

*Microscopical examination.*—(Section No. 7575). Section of the cervix shows ulceration of surface epithelium. Many confluent tuberculous follicles are seen in the fibro-muscular tissue with a large number of giant cells. There is no necrosis or caseation. There is no evidence of proliferative activity of the glandular epithelium.

*Case VI. Clinical history.*—Patient M, aged 26 years, was admitted into the Government Women and Children Hospital, Madras, on 22nd August, 1934, with

a complaint of complete amenorrhœa of four years' duration. She was married five years, had no children. The periods used to be regular till four years before admission to the hospital. The general condition of the patient was fair and nothing abnormal was noticed in the circulatory or respiratory system. On local examination, there was an ulcer on the cervix.

*Microscopical examination.*—(Section No. 1705). Section of cervix shows an ulcer subjacent to which is seen tuberculous granulation tissue with areas of necrosis. The glandular acini are almost completely atrophied. The small blood vessels of the muscular layer show perivascular round-cell infiltration.

*Case VII. Clinical history.*—Patient S, female, aged 32 years, sought admission into the Government Women and Children Hospital, Madras, on 2nd December, 1935, with a complaint of irregular bleeding *per vaginam* alternating with leucorrhœa for a period of five months. She was married eighteen years before admission to the hospital and had five children, the last child being six years of age. She was very anæmic and poorly nourished. She gave a history of a swelling in the neck six years ago which burst leaving a visible scar at the site of the swelling (caseating tuberculous glands?). On physical examination of the chest a few râles were heard in the right apex. There was no definite dullness. A skiagram of the chest revealed nothing abnormal in lungs. Local examination of the cervix revealed an irregular hard ulcer of both lips extending into the right lateral fornix. The margins of the ulcer in some places were sharply defined and were not specially friable. The uterus was enlarged and retroverted. On rectal examination, a certain amount of infiltration was felt in both broad ligaments.

*Microscopical examination.*—(Section No. 2815). Section of the cervix shows ulceration of the mucous membrane at one part with subjacent fibro-myomatous tissue. Scattered here and there are seen typical tuberculous follicles with very little necrosis. Most of these are seen at considerable depth in the tissue. Groups of round cells and plasma cells are seen throughout the section.

*Case VIII. Clinical history.*—Patient A, female, aged 20 years, was admitted in the Government Women and Children Hospital, Madras, on 26th November, 1935, with a complaint of leucorrhœa and scanty but prolonged periods for two years, the periods lasting for about fifteen days. She was also suffering from attacks of pain in the right iliac fossa with vomiting. Her general condition was fair though anæmic. Physical examination of heart and lungs revealed nothing abnormal. On local examination, the cervix was found to be hard and hypertrophied with a number of nodules on it. The uterus was retroverted, bigger than normal, freely movable and tender. The right ovary was prolapsed.

*Microscopical examination.*—(Section No. 2716). Section of the cervix shows at one part a lining of columnar epithelium with subjacent dense fibrous tissue and involuntary muscle tissue. Numerous hyperplastic tuberculous follicles are seen densely packed in the sub-epithelial tissues. There is marked proliferation of endothelioid cells with complete absence of necrosis.

#### Discussion

Tuberculosis of the uterus is a rare affection. It is most common in adults, the average age

incidence in our collection of cases being 28 years. The age, symptoms, etc., of the cases are shown below:—

duced into the peritoneal cavity found their way into the uterus and vagina through the Fallopian tubes. The possibility of the spread

Serial number	Age	Symptoms and duration	Pre-operative diagnosis	Evidence of tuberculosis apart from uterus
1	55	Serosanguineous discharge (6 months).	Tubercle or cancer	Peritoneum and fallopian tube.
2	25	Leucorrhœa and amenorrhœa (2 years).	Tubercle	Groin glands.
3	23	Profuse painful periods (1 year).	Chronic endometritis	Fallopian tube.
4	20	Bleeding (1 year), leucorrhœa (6 years).	Malignant	Intestines and fallopian tube.
5	25	Leucorrhœa and amenorrhœa (2 years).	Do.	Nil.
6	26	Leucorrhœa and amenorrhœa (5 years).	Do.	Nil.
7	32	Bleeding and leucorrhœa (5 months).	Malignant and tubercle	Glands neck.
8	20	Scanty but prolonged periods (2 years).	Malignant	Nil.

Clinically the most common symptom is leucorrhœa even though some of the patients complained of amenorrhœa and others of bleeding *per vaginam*. The duration of the symptoms varied from a period of five months to six years. There was histological evidence of tuberculous cervicitis in all cases except one (case I). Cases III, V and VI showed an ulcerative condition of the cervix which simulated cervical erosion. In two cases (II and IV) there was an ulcerated cauliflower-like growth in the cervix which very much resembled a malignant growth. As a matter of fact the pre-operative diagnosis in most cases was that of malignant disease. This shows that histological examination of the affected tissue is of particular importance in the correct diagnosis of uterine tuberculosis, since there are no definite clinical signs or symptoms pathognomonic of this disease. Evidence of abdominal tuberculosis was present in cases I and IV, whereas in case III, apart from tubercles on Fallopian tubes, no other focus was discovered. In case II there was a cold abscess in the right groin even though there was no disease of the respiratory system. There was a history of old glandular tuberculosis in case VII. In cases V, VI and VIII there is no evidence of any other focus of tuberculosis apart from cervix and the possibility of primary tuberculosis of this tissue is to be considered. The mode of infection in cases of primary tuberculosis is uncertain and on account of lack of clinical data we are not able to trace the infection in these cases to infection by coitus from genito-urinary tuberculosis. The uterine infection in case I is obviously secondary to peritoneal infection. The infection might have spread from the peritoneum to the uterine mucosa *via* the Fallopian tubes as suggested by the experiments of Pinner, who showed that

fine particles of cinnabar or lamp black introduced through the entire thickness of the uterine wall is remote. Case III is an example of miliary type of tuberculosis. The endometrium is not affected at all and the myometrium shows miliary tubercles in close relation to blood vessels, suggesting a hæmatogenous spread.

Histologically, in early cases the tubercle follicles are situated beneath the surface epithelium in the stroma between the glandular acini. These gradually coalesce, undergo caseation and cause ulceration of the surface epithelium. A rare interstitial type has been described in which there is a diffuse enlargement of cervix with intact surface epithelium (Frank). Case VIII illustrates such a type. It has been noted by some authors, particularly by von Franque, that in tuberculosis of the cervical mucosa there is stratification of glandular epithelium and obliteration of the lumen of the acini. This has not been observed in our cases.

#### Summary

The first part of this paper is based on a study of fifteen cases of tuberculous tonsils met with in a series of 2,477 tonsillectomies. The incidence and histopathology are discussed.

The second part is devoted to the study of eight cases of tuberculosis of the uterus. The clinical features and histopathology of these cases are described as fully as possible.

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