

# Genital tuberculosis at Tygerberg Hospital — prevalence, clinical presentation and diagnosis

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## Summary

Over a period of 30 months (1 July 1986-31 December 1988) 57 cases of genital tuberculosis were diagnosed at Tygerberg Hospital. Forty of these cases were diagnosed as a result of routine screening in 650 patients who presented with infertility and the other 17 were diagnosed in patients admitted to the gynaecological wards. The prevalence in patients presenting with infertility was 6,15%. The commonest gynaecological presenting symptom was infertility (73,7%). Dysmenorrhoea in 29,8% and deep dyspareunia in 12,3% were the only other frequently occurring gynaecological symptoms. Menstruation was normal in 50 patients (87,7%). Seven per cent of patients were postmenopausal. Abdominal symptoms were only present in 15,8%. These findings re-emphasise that genital tuberculosis is often a disease of absent or few symptoms. General, abdominal and pelvic examinations were normal in 56,1% of patients and even when clinical signs were present they were nonspecific.

Menstrual fluid collection and culture proved to be the most reliable diagnostic procedure, since it was positive in 11 patients in whom premenstrual endometrial sample cultures were negative and also in 17 patients in whom histological examination of premenstrual endometrial samples for tuberculosis were negative. The possible reasons for this and its clinical importance are discussed. Other than histological examination of operation and/or biopsy specimens, special investigations proved to be of little help in the diagnosis of genital tuberculosis.

S Afr Med J 1992; 81: 12-15.

The prevalence of genital tuberculosis is directly proportional to the incidence of extra-genital tuberculosis in an area. Therefore its prevalence differs not only from country to country, but also varies in different areas within the same country.<sup>1,2</sup>

The prevalence of genital tuberculosis in infertile patients at Tygerberg Hospital has recently been reported.<sup>3</sup> This study was undertaken to establish the clinical presentation of genital tuberculosis at Tygerberg Hospital and also to evaluate some of the diagnostic procedures that were employed in its diagnosis.

## Patients and methods

Over a 30-month period (1 July 1986-31 December 1988) all 650 patients seen at the infertility clinic at Tygerberg Hospital

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were screened for genital tuberculosis by the collection and culture of menstrual fluid using a technique previously described.<sup>3</sup> Forty out of these 650 patients had positive cultures for *Mycobacterium tuberculosis* (36 have been previously reported).<sup>3</sup>

During the same period (1 July 1986 - 31 December 1988) 17 out of 9 549 patients admitted to the gynaecology wards at Tygerberg Hospital were diagnosed as having genital tuberculosis on histological examination of tissue samples. Routine screening for genital tuberculosis by collection and culture of menstrual fluid was not carried out on any of these 9 549 patients.

The clinical records of these 57 patients were reviewed and analysed.

## Results

The prevalence of genital tuberculosis in patients presenting with infertility was 6,15%.

Forty-eight patients (84,2%) were under 40 years of age. No patient gave a history of either having had or of having been in contact with extra-genital tuberculosis. Fifty-nine per cent of patients had been pregnant. A history of previous pelvic inflammatory disease was obtained from 6 patients and of previous ectopic pregnancy from 4 patients (Table I).

TABLE I. AGE AND PAST HISTORY OF PATIENTS

	IP (N = 40)		GAP (N = 17)	
	No.	%	No.	%
Age (yrs)				
20 - 29	16	40	4	23,5
30 - 39	22	55	6	35,3
40 - 49	2	5	3	17,65
50 - 59	0	-	3	17,65
60 - 69	0	-	1	5,9
Gravidity				
0	20	50	3	17,65
1	16	40	3	17,65
2 - 4	4	10	5	29,4
5+	0	-	2	11,8
Not recorded	0	-	4	23,5
Previous history of TB	0	-	0	-
History of past contact with TB	0	-	0	-
Past gynaecological problems				
Pelvic inflammatory disease	6	30	0	-
Ectopic pregnancy	3	15	0	-
Recurrent urinary tract infection	2	10	0	-

IP = infertility patients; GAP = gynaecology admission patients.

Nine patients (15,9%) presented with abdominal symptoms (the commonest being lower abdominal pain in 5). Infertility was the commonest presenting symptom. Fifty patients (87,7%) had no menstrual abnormality, 3 patients had amenorrhoea and 4 patients were postmenopausal. No patient presented with abnormal bleeding, 17 patients complained of dysmenorrhoea and 7 patients of deep dyspareunia.

Two patients presented with ulcerative vulval lesions (Table II).

	IP (N = 40)		GAP (N = 17)	
	No.	%	No.	%
<b>Infertility</b>	<b>40</b>	<b>100</b>	<b>2</b>	<b>11,8</b>
<b>Menstruation</b>				
Normal	38	95	12	70,6
Abnormal				
Amenorrhoea	2	10	1	5,9
Excessive bleeding	0	-	0	-
Postmenopausal	0	-	4	23,5
Dysmenorrhoea	16	40	1	5,9
Dyspareunia	6	15	1	5,9
Vulval and/or vaginal lesion	0	-	2	11,8
Abnormal cervical cytology	0	-	2	11,8
<b>Abdominal symptoms</b>				
Lower abdominal pain	0	-	5	29,4
Abdominal distention	0	-	2	11,8
Lower abdominal mass	0	-	1	5,9
Symptoms of intestinal obstruction	0	-	1	5,9

\* Some patients had more than one symptom.  
IP = infertility patients; GAP = gynaecology admission patients.

No abnormality was detected on either abdominal or gynaecological examination in 32 patients (56,1%), abnormal abdominal findings were present in 5 patients (8,8%). Two patients had vulval ulcers and in 1 of these the lesion extended into the vagina, and 4 patients had cervical abnormalities. Uterine abnormalities were found in 6 patients (a large multifibroid uterus was present in 2) and adnexal abnormality was present or suspected in 9 patients (19,3%) (Tables III and IV).

	IP (N = 40)		GAP (N = 17)	
	No.	%	No.	%
<b>No abnormality detected</b>	<b>29</b>	<b>72,5</b>	<b>3</b>	<b>17,7</b>
<b>Signs of acute infection</b>	<b>0</b>	<b>-</b>	<b>2</b>	<b>17,7</b>
<b>Signs of active pulmonary tuberculosis</b>	<b>0</b>	<b>-</b>	<b>1</b>	<b>5,9</b>
<b>Abnormalities on abdominal examination</b>				
None	40	100	12	70,6
Multifibroid uterus	0	-	2	11,8
Signs of acute pelvic infection	0	-	1	5,9
Gross ascites	0	-	1	5,9
Signs of intestinal obstruction	0	-	1	5,9

\* Some patients had more than one symptom.  
IP = infertility patients; GAP = gynaecology admission patients.

A hysterosalpingogram was performed in 26 patients. In 13 (50%) the fallopian tubes were blocked and in 13 (50%) they were patent, but the characteristic findings associated with genital tuberculosis were present in none.

Abdominal radiographs were normal in all of the 28 patients in whom they were performed and chest radiographs

	IP (N = 40)		GAP (N = 17)	
	No.	%	No.	%
<b>Uterus</b>				
Normal	38	95	13	76,4
Abnormal				
Enlarged	2	5,0	2	11,8
Retroverted	0	-	2	11,8
<b>Cervix</b>				
Normal	37	92,5	16	94,1
Abnormal				
Polyp	1	2,5	0	-
Ectopy	1	2,5	1	5,9
Pigmented lesion	1	2,5	0	-
<b>Adnexa</b>				
Normal	34	85	12	70,5
Abnormal				
Tenderness	2	5,0	1	5,9
Distinct mass	0	-	4	23,6
Vague mass	4	10,0	0	-
Vaginal and/or vulval ulcer	0	-	2	11,8
Thickened uterosacral ligaments	1	2,5	0	-

\* Some patients had more than one symptom.  
IP = infertility patients; GAP = gynaecology admission patients.

were normal in 53 patients (93%). In the 4 that were abnormal (7%), 2 had signs of healed tuberculosis, 1 had signs of active tuberculosis (despite no previous history of or contact with tuberculosis in any of these 3 patients) and the other had radiographic signs that were not suggestive of tuberculosis. Findings on laparoscopy were abnormal in 19 patients (63%) but were nonspecific, being either adhesions (peritubal adhesions or adhesions between the fallopian tubes and adjacent structures) or abnormalities of the tube (dilatation, kinking, thickening, swelling and decreased mobility). No tubercles or uterine abnormalities were visualised. Laparotomy was performed on 9 patients and the diagnosis of tuberculosis was only suspected in 5 (55,6%). In the other 4 (44,4%) the diagnosis was only made after histological examination of tissues and/or biopsies obtained at laparotomy (Table V).

Menstrual fluid cultures were positive in 40 of the infertility patients. In 11 patients with positive menstrual fluid cultures the endometrial sample cultures were negative and in 17 patients with positive menstrual fluid cultures the endometrial samples were negative on histological examination. In 4 patients admitted to the gynaecology wards the entire upper genital tract was examined histologically. The histological examination of the fallopian tubes was positive for genital tuberculosis in all, whereas the histological examination of the endometrium was positive only in 2 patients. Ziehl-Neelsen staining was performed on more than one histological specimen from the same patient in 17 patients with variable results (Table VI).

Biopsy specimens were taken from extra-genital tissues in 8 patients and 5 positive omental biopsies, 2 positive peritoneal biopsies and 1 positive mesenteric lymph node biopsy were obtained.

## Discussion

The prevalence of genital tuberculosis in patients admitted for infertility (6,15%) is within the quoted average prevalence of 5-10%. It is, however, higher than that reported from Saudi

TABLE V. RESULTS OF INVESTIGATIONS

	IP (N = 40)		GAP (N = 17)	
	No.	%	No.	%
<b>Hysterosalpingography</b>				
Tubes patent and normal in appearance	12	30,0	0	-
Tubes patent and abnormal in appearance	1	2,5	0	-
Tubes blocked	12	30,0	1	5,9
Not done	15	37,5	16	94,1
<b>Chest radiographs</b>				
Normal	40	100	13	76,4
Abnormal				
Healed tuberculosis	0	-	2	11,8
Active tuberculosis	0	-	1	5,9
Not obviously tuberculosis	0	-	1	5,9
<b>Abdominal radiographs</b>				
No evidence of tuberculosis	25	62,5	3	17,1
Not done	15	37,5	14	82,3
<b>Laparoscopy</b>				
Appearance of tubes				
Normal	10	25,0	1	5,9
Abnormal	17	42,5	2	11,8
Not done	13	32,5	14	82,3
<b>Tubal patency</b>				
Patent bilateral or unilateral with only one tube present	9	22,5	0	-
Patent unilateral with both tubes present	4	10,0	0	-
Blocked bilateral or unilateral with one tube present	2	5,0	0	-
Not done	25	62,5	17	100
<b>Laparotomy</b>				
Diagnosis of tuberculosis suspected	0	-	5	29,5
Diagnosis of tuberculosis not suspected	0	-	4	23,5
Not done	40	100	8	47,0

IP = infertility patients; GAP = gynaecology admission patients.

Arabia (4,2%),<sup>4</sup> Nigeria (3,8%),<sup>5</sup> Natalspruit, RSA (4,85%),<sup>2</sup> and Australia (less than 1%) but lower than in India (9,48%)<sup>6</sup> and Bloemfontein, RSA (21%).<sup>1</sup>

The majority of our patients were under 40 years of age; however, the finding that 7 out of 17 patients in the gynaecology admissions group were over the age of 40 years confirms the observation of Hutchins<sup>7</sup> and Sutherland<sup>8</sup> that the peak age prevalence for genital tuberculosis may be rising to the 40-50-year-old age group.

The fact that 4 of the gynaecology admission patients in this study were postmenopausal confirms the findings of other authors<sup>7-9</sup> that genital tuberculosis does occur in postmenopausal women.

Despite the fact that a past history of extra-genital tuberculosis is reported to be present in anything from 30% to 80% of patients<sup>6,7,10,11</sup> and of contact with tuberculosis in 14-20% of patients suffering from genital tuberculosis<sup>6,7</sup> neither history was obtained from any of the patients in this study.

Genital tuberculosis has been reported<sup>7,11-14</sup> to be associated with primary infertility and hence to occur most commonly in nulliparous females. In the present study as many patients complained of secondary as of primary infertility. This confirms the findings reported from Saudi Arabia<sup>4</sup> (12 out of 40 (30%) were parous) and Nigeria<sup>15</sup> (12 out of 15 (75%)) that genital tuberculosis is not infrequently found in patients who have secondary infertility.

That genital tuberculosis often exists without any, or non-specific, symptoms was confirmed in this study, especially in the infertility patients. The absence of clinical signs in 56,1% of patients corresponds with the findings of Chattopadhyay *et al.*<sup>4</sup> (53%) and Ojo *et al.*<sup>5</sup> (56%).

The low incidence of amenorrhoea is in keeping with what has been reported from First-World countries, but is very much lower than recorded in Nigeria (56%)<sup>5</sup> and India (62,5%,<sup>13</sup> 42,3%<sup>16</sup>).

The presence of clinical signs suggestive of adnexal disease in only 19,3% of patients, is comparable with the findings from Sweden (29%)<sup>10</sup> and in India (25%,<sup>13</sup> 15,4%<sup>16</sup>) but is much lower than reported from Saudi Arabia (38%),<sup>4</sup> and Massachusetts, USA (45%).<sup>17</sup>

Our findings that menstrual fluid collection and culture was the most reliable procedure for diagnosis of genital tuberculosis confirm those of Halbrecht<sup>18</sup> and Oosthuizen *et al.*<sup>1</sup> In addition, menstrual fluid collection and culture is easy to do, requires no special equipment, is inexpensive, is virtually non-invasive, has few side-effects, is readily repeatable and therefore can be used as a screening test for genital tuberculosis.

The finding that menstrual fluid culture was positive in 11 infertility patients in whom the premenstrual endometrial sample culture was negative and in 17 infertility patients in whom histological examination of the premenstrual endometrial sample was negative may be due to the fact that the endometrial sample was either not obtained from the cornu of the uterus or not taken on the correct day of the menstrual cycle, or that tubercle bacilli from infected fallopian tubes are present in the endometrial cavity for a while before the endometrium itself is invaded (if so, an added advantage of menstrual fluid culture may be that it can be used to diagnose genital tuberculosis while it is still confined to the fallopian tube).

The fact that histological examination of the fallopian tubes was positive for tuberculosis in all 4 patients in whom the entire upper genital tract was examined, while the histological examination of the endometrium was only positive for tuberculosis in 2 out of the 4 patients, serves to indicate that a negative premenstrual endometrial sample examination does not exclude tuberculous salpingitis. Whether or not the same observation applies to menstrual fluid culture is at present not known.

TABLE VI. HISTOLOGICAL EXAMINATION AND CULTURE OF SPECIMENS

	+	-
<b>Sample examination in infertility patients</b>		
Menstrual fluid culture (N = 40)	40 (100%)	0
Curettage sample culture (N = 11)	0	11
Curettage sample histology (N = 17)	0	17
<b>Histological examination of entire upper genital tract (N = 4)</b>		
Fallopian tubes	4	0
Ovaries	2	2
Endometrium	2	2
Cervix	0	4
Myometrium	0	4
<b>Ziehl-Neelsen staining on more than one specimen from same patient (N = 17)</b>		
All positive	8	
All negative	4	
Some positive and some negative	5	

Radiological examinations (hysterosalpingography and chest and abdominal radiography) and also laparoscopy proved to be of little help in establishing the diagnosis of genital tuberculosis.

Even at laparotomy the diagnosis was not suspected in 4 out of 9 patients (44,4%) in whom the diagnosis was only made after histological examination of specimens removed at operation. This finding emphasises, firstly, that if genital tuberculosis is suspected biopsies should be taken at laparotomy and that the pathologist should be informed of the possibility so that he can actively look for histological evidence of tuberculosis and also exclude other conditions which on histological examination resemble tuberculosis and, secondly, that even in the presence of gross pathology all specimens removed at operation should be histologically examined, since genital tuberculosis may also be present. (Two of our patients presented with a multifibroid uterus.)

None of our patients presented with an ectopic pregnancy. This would seem to support the view of Halbrecht<sup>18</sup> that, although the chance of a tubal ectopic pregnancy is increased in patients who conceive after being successfully treated for genital tuberculosis, the co-existence of a tubal pregnancy and tuberculous salpingitis is uncommon.

Although a positive Ziehl-Neelsen staining of specimens for acid-fast bacilli gives the most rapid diagnosis, we found it to be a most unreliable diagnostic test.

The fact that positive histological examinations for tuberculosis were obtained in biopsy specimens from extra-genital structures indicates that genital tuberculosis is a part of an intra-peritoneal disease and this should be taken into account when treating the patient.

The findings in this study indicate that genital tuberculosis is not an uncommon condition at Tygerberg Hospital and that it also occurs in postmenopausal women. In addition, because infertility was the commonest presenting symptom routine screening of infertile female patients for genital tuberculosis by the collection and culture of menstrual fluid is recommended.

We would like to express our thanks to the medical and nursing staff of the Reproductive Biology Unit of the Department

of Obstetrics and Gynaecology at Tygerberg Hospital for allowing us access to the records of their patients as well as for their co-operation; the medical and technical staff (especially Frank Scott) of the Department of Microbiology at Tygerberg Hospital for their contribution; and to Mrs E. Foot our gratitude for her dedication and help in the preparation of this manuscript. Finally we would like to thank Dr J. G. L. Strauss, Chief Medical Superintendent of Tygerberg Hospital, for permission to publish.

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