

Original Article

An Over-View of Tuberculosis of Female Genital Tract With Reference To Experience in a Medical College in Rural Set-Up in West Bengal: A Retrospective Two Year Study

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Abstract

Aim: To determine frequency of female genital tract (FGT) tuberculosis (TB) in the gynecological biopsies received in the Department of pathology of a peripheral medical college. **Methods:** This is a retrospective study conducted in the Department of Pathology of Burdwan Medical College & Hospital. Histopathological records of two year (2008-2010) were retrieved and searched for the cases of female genital tract TB. Relevant histopathological findings and clinical data were recorded and analyzed. **Results:** There were 1537 cases of gynecological biopsy and 9 cases were diagnosed as FGT tuberculosis based on histopathological and clinical findings. Ovarian benign cystic teratoma was seen in one case along with ipsilateral tuberculous salpingitis, one case showed B/L ovarian tuberculosis with involvement of both the tubes. Bilateral fallopian tubes were involved in 2 cases and endometrial tuberculosis was diagnosed in 5 cases with 1 case showing simultaneous involvement of the cervix. In one case omental biopsy received along with tubal specimen showed tuberculous granulomas. **Conclusion:** FGT tuberculosis was usually seen in age 16-28 years and constituted 0.59% of total gynecological cases. Fallopian tubes, ovaries and endometrium and cervix were affected with the involvement of peritoneum or omentum, commonest being tuberculous endometritis. Histopathology, in association with clinical findings still remains gold standard for the diagnosis of FGT tuberculosis in our country despite advancement in diagnostic modalities; however, incidental histological detection in clinically unanticipated cases is not an uncommon event.

Key Words: Female genital tract TB, histopathology, clinical findings.

Introduction

Despite the effective diagnostic and therapeutic measures available, tuberculosis (TB) continues to prevail in developing countries. A report of the World Health Organization shows that there are at present, 20 million tuberculosis patients in the world, of whom approximately three-quarters, that is 15 million, live in developing countries.¹ The number of deaths resulting from this disease is about 3 million per year. At the same time the annual incidence rate of new tuberculosis cases is 2 million. Despite the fact that the methods of treatment are very well known, only one million patients are successfully treated each year.¹ Tuberculosis remains a major health problem in many developing countries

including India and in these countries genital tuberculosis is responsible for a significant proportion of women presenting with infertility.²

The actual incidence of genital tuberculosis cannot be assessed accurately in any population, since the disease is discovered incidentally in many patients, and in a large number of asymptomatic patients, the disease remains undiscovered.³ It is estimated that world over 5-10% of infertile women have genital tuberculosis, although this varies from less than 1% in the United States to nearly 18% in India.³

Genital TB is almost always secondary to a focus elsewhere in the body. In descending order of fre-

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quency primary focus is often situated in lungs, lymph nodes, urinary tract, and bone & joints. The primary focus is most often healed or quiescent by the time the genital TB becomes active.⁴ In descending order of frequency common sites involved by TB are fallopian tubes, ovaries, uterus, cervix and rarely vagina and vulva.⁴

Various diagnostic modalities have been used in diagnosis of genital tract TB, but, most often clinical and histopathological correlation is used to diagnose clinically anticipated cases of genital tuberculosis. In present study we have correlated clinical and histological findings in diagnosis of genital tract TB.

Methods

This is a retrospective study conducted in the Department of Pathology of Burdwan Medical College & Hospital, Burdwan, West Bengal. Histopathology records of two years (14th April 2008 to 13th April 2010) were retrieved and searched for the cases of genital tract TB. Relevant histopathological findings and clinical data were recorded and analyzed. Criteria of the diagnosis were histological presence of epithelioid granulomas with or without caseous necrosis and clinical findings.

Results

Total number of histopathological cases received in two year period was 5743 and out of that 1537 cases (26.76%) represented gynecological cases sent from Department of G & O, BMCH. 9 cases of female genital tract tuberculosis were diagnosed histopathologically based on clinical and histological findings (Table I). Age of the patients ranged from 16 years to 62 years with mean age of 39 year. Maximum num-

bers of the cases were seen in the age group 16-28 years. Female genital TB constituted 0.59% of total gynecological cases and 0.16% of total biopsies during these two year. Frequency of different sites of female genital tract involved by TB is shown in figure I. Endometrium was the most common site to be involved by TB (5 out of 9 cases) followed by fallopian tubes (4 out of 9 cases). In two of the cases both fallopian tubes were involved bilaterally, additional omental involvement was seen in one of these two cases and clinically there were adhesion of uterine adnexae and multiple tubercles in the omentum and peritoneum. One case of endometrial tuberculosis showed simultaneous involvement of the cervix. In one case there was Ovarian benign cystic teratoma along with ipsilateral tuberculous salpingitis, one case showed bilateral ovarian tuberculosis with involvement of both the tubes. In all the cases typical caseating epithelioid granulomas were seen.

Ethical & legal Procedure

This Protocol was approved by ethical committee of department of pathology of burdwan Medical college & Hospital, Burdwan, West Bengal.

Discussion

At histology the typical tubercle follicle is composed of central zone of epithelioid cells surrounded by, lymphocytes and plasma cells. Giant cells may be present. A central zone of caseation is present sometimes. First recorded case of tuberculosis of female genital organ was described by Morgagni in year 1961, at autopsy. Female genital tuberculosis is common in countries where pulmonary tuberculosis is widespread. Improved diagnostic techniques (e.g., endometrial curettage and biopsy, histologic examination of curettage, hysterosalpingography, bacteriologic examination of menstrual blood, laparoscopy,

Figure 1. Different sites of female genital tract involved by tuberculosis

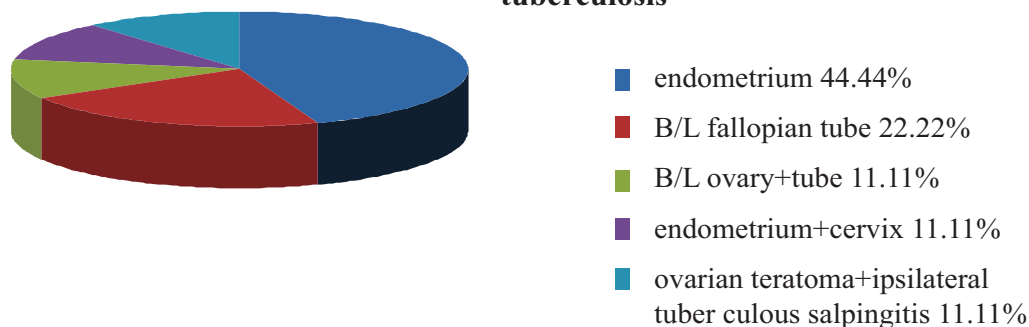


Figure -1 Different sites of female genital tract involved by tuberculosis

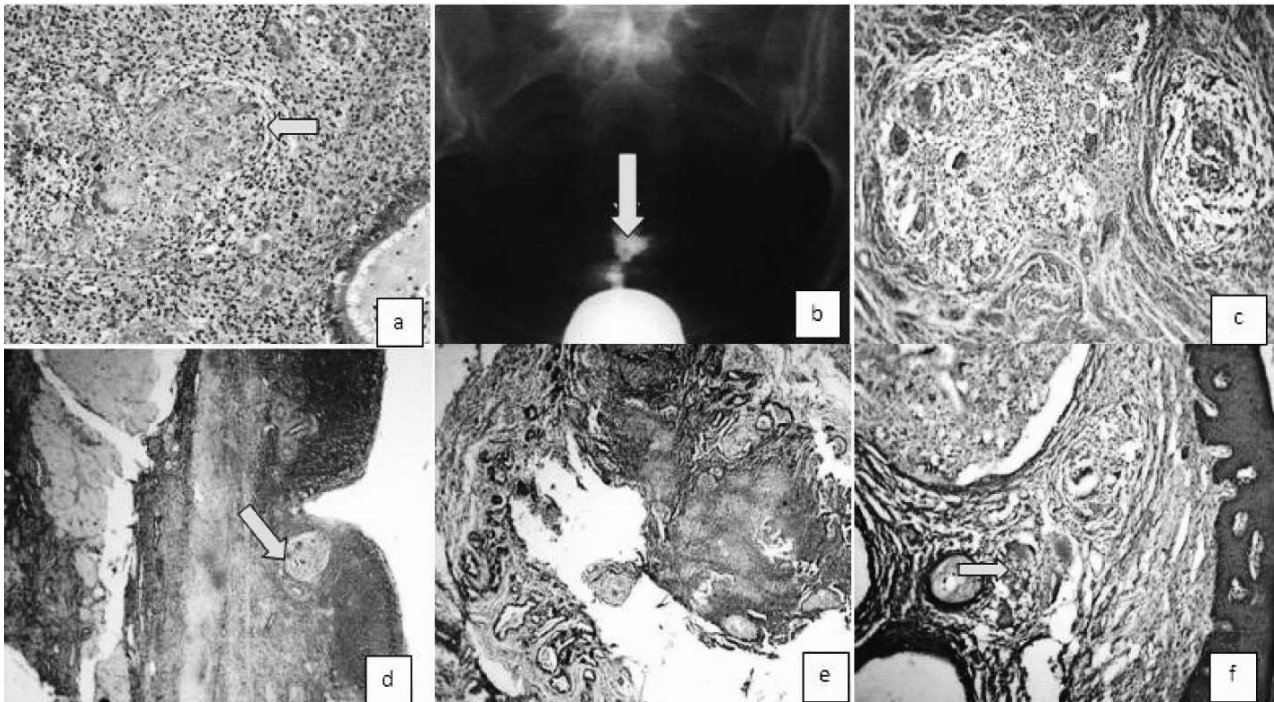


Figure 2: a) Endometrial tuberculosis (Hematoxylin & Eosin,400X). b) HSG showing irregular endometrial cavity and bilateral tubal block in a case presenting with tubo-ovarian mass; c) Tuberculous granulomas within the myometrium (Hematoxylin & Eosin, 100X); d) Ovarian tuberculosis (Hematoxylin & Eosin, 40X); e) Tuberculous endosalpingitis . (Hematoxylin & Eosin, 40X); f) Tuberculous cervicitis. (Hematoxylin & Eosin, 100X);

S N	Age (Yrs)	Clinical findings	Clinical, radiological & operative findings	Sites involved by TB	Histopathological findings
1	28	mass palpable in the right adnexal region. USG: right ovarian cystic SOL without any internal septa or solid component.	Right salpingo-oophorectomy	ovarian benign cystic teratoma co-existent with ipsilateral tuberculous salpingitis	granuloma with epithelioid cells & langhans giant cells in the tube. Sections from ovarian cyst-wall showed mature cystic terstoma.
2	16	tuboovarian mass	TAH+BSO	B/L fallopian tubes & ovaries	Necrotizing granuloma of bilateral fallopian tubes and ovaries consistent with TB
3	26	Tubo-ovarian mass with adhesion of omentum and Peritoneum.	TAH+BSO with omental biopsy	B/L fallopian tubes & omentum	Necrotizing granulomatous inflammation of bilateral fallopian tubes and granulo-matous inflammation of omentum consistent with TB.
4	19	Tuboovarian mass, HSG, bilateral tubal block	Bilateral salpingo-oophorectomy	Bilateral fallopian Tubes	Necrotizing granulomatous inflammation of bilateral fallopian tubes. Ovaries adherent to tube.
5	21	Vaginal discharge	D & C	Endometrium	Granulomatous endometritis consistent with TB
6	62	Second degree uterovaginal prolapse	Vaginal hysterectomy	Endometrium & cervix	Granulomatous inflammation of endometrium & cervix C/W TB
7	41	Infertility	D&C	Endometrium	Granulomatous endometritis
8	38	Menorrhagia	D & C	Endometrium	Granulomatous endometritis
9	43	Amenorrhoea	D & C	Endometrium	Granulomatous endometritis

Table 1. Female genital tract tuberculosis: clinical and histopathological findings.

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and ultrasonography) have resulted in increased awareness. Another trend has been heightened awareness of the potential role of female genital tuberculosis in 5-10% of infertility cases.⁵ Tuberculosis should be considered in differential diagnosis of causes of infertility, pelvic mass, and abnormal uterine bleeding, particularly in areas where tuberculosis is common.⁵ Patients with female genital tract tuberculosis are usually young women.⁷ 80-90% of patients are diagnosed between 20 and 40 years of age.³ In present study, age of the patients ranged from 16-62 years. 55.55% of cases were 16-28 years of age. Only one case out of nine was post-menopausal. After menopause genital tuberculosis is rare because of decreased vascularity of the tissues.⁷ In the study of Mehrangiz Hatami⁶ most patients were in the age groups of 26-30 years. In this study histopathological tuberculosis were seen in endometrium in 44%, in both fallopian tube in 22%, in bilateral tube and ovary, unilateral tube and in both endometrium and cervix in 11% cases each (Figure 1). Chaudhary NN⁵ has described fallopian tubes as most commonly affected sites (95-100%) followed by endometrium (50-60%) and ovaries (20-30%). In a study of Bapna 8et al fallopian tubes were involved in 72.4% of cases, but this study included only the cases of infertility.

Both tubes are likely to be affected by tuberculosis but endometrial disease may not be always present.⁹ Tuberculous pyosalpingx is due to early closure of the ostium and accumulation of cheesy exudate within the lumen. H.S.G. appearance: Greenberg has described the characteristic 'Tobacco-pouch or mail pouch' appearance of the fimbriated extremity. In 3 cases (33.33%) in present study, patient had features of tubo-ovarian mass, in 1 case (11.11%) patient had features of ovarian cyst. There was one case (11.11%) with complain of infertility. In one case of tubo-ovarian mass patient also had complain of infertility and hystero-salpingogram revealed bilateral tubal block. Fallopian tube constitutes the initial focus of genital tuberculosis in a majority of the cases and tuberculosis has accounted for approximately 5% of all cases of salpingitis in many parts of the world.^{10,12} The tubes are involved in at least 90% cases and the disease probably starts there.¹⁰

In the case of omental involvement by tuberculous granulomas in present study, there were multiple tubercles over adnexal surfaces of the tubes at lapro-

tomy and histopathological examination of B/L fallopian tubes revealed necrotising tuberculous granulomas. Tuberculous peritonitis is seen in combination with female genital tract tuberculosis in approximately 45% of patients and is responsible for extensive adhesions.¹⁰ The gross appearance varies and is often consistent with chronic salpingitis. Rarely the peritoneal surface of the tubes is studded with tubercles and filled with caseous material.¹⁰ Dense adhesions are also seen in some cases and frozen pelvis is seen in 17.2%.⁸ Tuberculous involvement of fallopian tubes and ovaries giving rise to tubo-ovarian mass can mimic tubo-ovarian malignancy. Pelvic tuberculosis can also simulate ovarian carcinoma.⁹ Gupta et al studied 233 cases of ovarian tumor and tumor-like lesions and tuberculosis constituted 2.9% of cases and was the major cause of clinical diagnostic pitfalls for the cases in which clinical diagnosis of ovarian neoplasm was made.¹³ In present study similar features are seen in one case involving bilateral fallopian tubes and ovaries with adhesion and destruction of the normal architecture of the ovaries. Ovaries were completely replaced by fibrous tissue, caseating granulomas and neutrophilic exudates. In these cases peritoneal surface of the tubes and ovaries also showed typical tuberculous lesions. Classic tuberculous pyosalpinx was seen in two cases with B/L tubal involvement. In one of these two cases omentum was adherent and showed tuberculous lesion. Fallopian tube showed epithelioid granulomas within the mucosa, in the wall and over peritoneal surface.

There were 4 cases of endometrial tuberculosis, which presented with vaginal discharge, unexplained infertility, menorrhagia and amenorrhoea respectively. Diagnostic endometrial curettage in these cases showed tuberculous endometrial granulomas (Figure 2a). Tuberculous endometritis in endometrial biopsies of infertile women was seen in 4.97% of cases in a study by Sharma and Mittal.¹¹ Another case of tuberculous involvement of endometrium with cervix was diagnosed incidentally in a vaginal hysterectomy specimen for second degree utero-vaginal prolapse. The finding of endometrial tuberculosis almost always means that the tubes are infected, although not necessarily closed. But tuberculous salpingitis is sometimes found without associated endometritis. In this study all the cases of endometrial tuberculosis histologically showed non-caseating granulomas with alter-

ation of glandular architecture. Endometrial glands were crowded and showed slit like features. Granulomas were seen in the interstitium and showed numerous typical Langhans type of giant cells surrounded by epithelioid cells and chronic inflammatory cells. Hoff et al¹⁴ reviewed 11 cases of granulomatous endometritis and none of the cases revealed caseation as in the present study. It has been hypothesized that tuberculous granulomas in the endometrium are sometimes not necrotic because of the high turnover rate of these tissues as part of the normal menstrual cycle. In non-endometrial tissue or in post-menopausal women, however, this would not be a factor and some evidence of caseous necrosis might be expected. Absence of Acid fast bacilli as demonstrated by Ziehl-Neelsen stain does not preclude the possibility of tuberculosis.¹⁴ However, a clinical correlation is required to rule out other lesions producing endometrial granulomas such as fungal, viral and parasitic infections, sarcoidosis, vasculitis, foreign body reactions, radiotherapy, ceroid accumulation, and previous instrumentations.¹⁴ In a study by Reys and Maheshwari¹⁵ involving 500 endometrial biopsies no characteristic endometrial pattern was found to be specific for a tuberculous lesion. A deviation from normal pattern such as proliferative, mixed and hyperplastic endometrium was noted in number of cases. The tuberculous lesion was found to be diffuse with caseation in amenorrhea cases while a focal non-caseating granuloma was a feature with normal cycles.¹⁵ An appropriate sample is required for accurate diagnosis of endometrial tuberculosis. Curettage should be carried out in the late premenstrual phase from the cornu of the uterus. This because tubercles are present in the superficial layers and are shed during menstruation and cornual end is the first part of uterine cavity to be affected by descending infection from the fallopian tubes.⁴ Absence of signs of tuberculous endometritis in any one biopsy, is not a proof of absence of the disease. Positive results follows one or more negative results. Culture of menstrual blood containing mucous and endometrial shreds, is recommended. Culture media recommended is Loewenstein's or Petragnani's. 6 to 8 consecutive negative culture is necessary in order to exclude genital tuberculosis.⁴

Less common manifestations of genital tuberculosis in women are tuberculosis of the cervix which can mimic carcinoma and donovanosis. Tuberculous ulceration of the vulva is rare. It presents as chronic, painful genital ulceration and may be accompanied

by scarring and sinuses.⁹

As we took three-year data, only one case of tuberculosis of cervix was recorded which had simultaneous endometrial involvement and no case of vaginal or vulvar involvement was seen which is very rare. Despite the advancement in the diagnostic modalities histopathological diagnosis of female genital tract tuberculosis still remains gold standard in both clinically anticipated and unanticipated cases. Histopathologically tuberculous lesions show typical epithelioid granulomas with or without giant cells. Caseous necrosis as well may or may not be seen in the sections. In addition to typical granulomas there may be secondary changes in the tissue such as fibrosis, suppuration and destruction of the normal architecture of the tissue. In present study in all the cases typical epithelioid granulomas were seen. Caseous necrosis was seen in the case of ovarian (Figure 2d) and fallopian tube (Figure 2e) involvement, while it was not seen in the omental and endometrial lesions. Dense adhesions often develop around such a pyosalpinx, involving bowel, omentum, ovary, and uterus. In absence of adhesions such pyosalpinx may remain mobile giving rise to an abdominal lump simulating ovarian cyst.

T.B. of cervix is rare and estimated incidence is 3 to 8 %. The cervix may show frank papillary or ulcerative lesion, which may stimulate carcinoma cervix, on gross examination.

Conclusion

Female genital tract tuberculosis is a common cause of morbidity in a developing country like India. Most of the cases remain silent for many years and detected in course of investigation for pelvic and abdominal mass or infertility. It is often seen in young female in their reproductive age. Maximum numbers of the cases in present study were seen in the age group 16-28 years. In present study female genital TB constituted 0.59% of total gynecological cases and 0.16% of total biopsies. Endometrium, Fallopian tube and ovaries and are the common sites to be involved as it was seen in present study. Secondary involvement of peritoneum and omentum as a result of tuberculous endosalpingitis is also a common event and was seen in one case in present study. Histopathology in association with clinical findings still remains gold standard for the diagnosis of female genital tract tuberculosis in our country despite advancement in diagnostic modalities.

References

1. Repond R. Tracking down tuberculosis. WHO 1974; 28 – 33.
2. Muir DG, Belsey MA. Pelvic inflammatory disease and its consequences in the developing world. *Am J Obstet Gynecol* 1980;**138**: 913-28. PMID:7008606
3. Schaefer G. Female genital tuberculosis. *Clin Obstet Gynecol* 1976; **19**: 223-39. <http://dx.doi.org/10.1097/00003081-197603000-00016> PMID:1082803
4. Padubidri V, Daftary SN. Tuberculosis of the Genital Tract, in: Howkins & Bourne, Shaw's Textbook of Gynaecology, edition 11. New Delhi, B.I. Churchill Livingstone. 1994; pp 155-164.
5. Chowdhury N N. Overview of tuberculosis of the female genital tract. *J Indian Med Assoc.* 1996; **4**: 345-6, 361.
6. Mehrangiz Hatami. Tuberculosis of the female genital tract in Iran. *Archives of Iranian Medicine* 2005; **8**:32 – 35
7. Gungorduk K, Ulker V, Sahbaz A, Ark C, Tekirdag AI. Postmenopausal tuberculosis endometritis. *Infect Dis Obstet Gynecol.* 2007; 2007: 27028.
8. Bapna Neelam, Swarankar Mohanlal, Kotia Namita. Genital tuberculosis and its consequences on subsequent fertility. *J Obstet Gynecol Ind* 2005; **55**: 534-537.
9. Richens J. Genital manifestations of tropical diseases. *Sex Transm Infect* 2004; 80:12-17. <http://dx.doi.org/10.1136/sti.2003.004093> PMID:14755029 PMID:1758389
10. Varma TR. Genital tuberculosis and subsequent fertility. *Int J Gynaecol Obstet* 1991; **35**:1-11. [http://dx.doi.org/10.1016/0020-7292\(91\)90056-B](http://dx.doi.org/10.1016/0020-7292(91)90056-B) PMID:20695826
11. Sharma SP and Mital VP. Incidence of endometrial tuberculosis in sterility cases in Eastern U.P. *Indian Journal of Tuberculosis* 1979; **26**: 157-159.
12. Novak ER, Woodruff JD. Novak's Gynecologic and Obstetric Pathology, 8th edn. Philadelphia. WB Saunders. 1979; pp 328.
13. Gupta N, Bisht D, Agarwal AK, Sharma VK. Retrospective and prospective study of ovarian tumors and tumor-like lesions. *Indian J Pathol Microbiol.* 2007; **50**: 525-7. PMID:17883123
14. Hoff Elise, Prayson Richard A. Incidental Granulomatous Inflammation of the Uterus. *South Med J* 2002; **95**: 884-888. PMID:12190226
15. Reys H and Maheshwari HB. Tuberculosis of the endometrium: a histopathology of 500 biopsy cases. *Indian Journal of Tuberculosis* 1971; **18**: 27-33.