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Full Length Article

Laparoscopy in the diagnosis of tuberculosis in chronic pelvic pain

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ABSTRACT

Background: To estimate the prevalence of genital tuberculosis in women with idiopathic chronic pelvic pain on laparoscopy, correlate laparoscopic findings with microbiological and histological diagnosis of tuberculosis and assess the response to anti tubercular treatment (ATT) in these cases. **Method:** In a prospective cohort study, fifty women with idiopathic chronic pelvic pain were enrolled. Diagnostic laparoscopy was done in all women and fluid from pouch of Douglas and/or saline washings were sent for acid fast bacilli (AFB) smear, conventional and rapid culture and DNA polymerase chain reaction (PCR) analysis for diagnosis of genital TB. The results of these tests were analyzed and agreement with laparoscopy was assessed using Kappa statistics. Pain scores using visual analogue scale were compared before and after treatment. **Results:** Pelvic pathology was present in 44 (88%) women of idiopathic chronic pelvic pain, with a 34% prevalence rate of genital tuberculosis. Pelvic inflammation was associated with positive peritoneal fluid PCR (n = 4) and AFB culture (n = 3). Acid fast bacilli PCR had substantial agreement (kappa statistics = 0.716) with visual findings at laparoscopy. There was a significant reduction in pain scores after treatment. **Conclusion:** Genital tuberculosis contributes to one-third cases of chronic pelvic pain. Pelvic inflammation is an early feature of genital TB and peritoneal fluid PCR has the best co-relation with laparoscopic findings of genital tuberculosis.

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Introduction

The global prevalence of chronic pelvic pain (CPP) ranges from 4% to 43.4%, with prevalence rates reported to

be 15% and 24% in the United States and the United Kingdom, respectively [1]. The prevalence rate of CPP in Asia ranges from 5% to 43%, whereas in India it is 5.2% [1]. CPP accounts for 20% of outpatient visits to

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gynecologists, 40% of laparoscopies, and 10–15% of hysterectomies [2,3].

CPP is a multifactorial entity, with a poorly understood etiology and complex pathophysiology. As a result, there is a lack of evidence-based diagnosis and management options for CPP. Management of CPP in women is difficult with normal gynecological examinations and imaging studies (idiopathic CPP) and such cases are best evaluated on laparoscopy. Common findings on laparoscopy in these cases include endometriosis, adhesions, pelvic inflammatory disease, and pelvic congestion [4].

Pelvic inflammatory disease is an important cause of CPP, of which genital tuberculosis (TB) may present as CPP in 42–80% cases, the latter being higher in developing countries [5,6]. Developed countries have seen a resurgence in the incidence of TB mainly because of human immunodeficiency virus infections, but the prevalence of CPP due to genital TB is not known. Diagnosis of female genital TB is difficult due to its paucibacillary nature, and available conventional methods such as erythrocyte sedimentation rate (ESR), Mantoux test, and chest X-ray have low sensitivity and specificity. Isolation of acid-fast bacilli (AFB) on smear and culture and presence of granulomas on histopathology have the highest specificity for diagnosis of genital TB, but these lack sensitivity [7]. Rapid diagnostic methods such as BACTEC 460 *Mycobacteria* growth inhibitor tube (MGIT) and specific gene probes have recently gained popularity [8]. Polymerase chain reaction (PCR) for detecting mycobacterial DNA (*mpt64* gene) has high sensitivity and specificity and may indicate disease positivity even if the number of bacteria present is as low as one to 10 organisms/mL [9].

Genital TB usually occurs as a secondary infection due to hematogenous spread and primarily affects the fallopian tubes in 95–100% cases [7]. It was hypothesized in this study that the bacilli will be shed more frequently into the pouch of Douglas (POD) from the fallopian tubes. Therefore, isolation of bacilli from the fluid samples of the POD or peritoneal washings will be useful, especially in the management of women with pelvic pain of unknown etiology.

The aim of the study was to evaluate the prevalence of genital TB in women with idiopathic CPP. Secondary study objective was to correlate laparoscopic findings with microbiological and histological diagnoses of TB to determine the best diagnostic test and assess the response to therapy after laparoscopy.

Materials and methods

Setting

This prospective cohort study was conducted in the Department of Obstetrics and Gynecology and the Department of Microbiology at the University College of Medical Sciences and Guru Teg Bahadur Hospital (Delhi, India) between October 2011 and December 2012. Institutional Review Board Committee approval was obtained from the Institutional Ethical Committee of University College of Medical Sciences and informed written consent was obtained from each patient.

Study population

From a previously conducted pilot sample study of 20 cases, the incidence rate of genital TB in CPP was found to be 40% (unpublished data). To estimate the incidence rate of 40% with 15% absolute precision on either side with 95% confidence level, with continuity correction, a sample size of 44 patients was adequate. Based on this statistics, 50 consecutive women aged between 18 years and 50 years, attending the Gynecology Outpatient Department, with pelvic pain lasting for more than 6 months, and with normal gynecologic examination results (idiopathic CPP) were included in this prospective study to allow for 10% loss to follow-up.

Women with a known cause of CPP such as fibroid uterus, adenomyosis, tubo-ovarian masses, obvious nongynecological cause of CPP, currently on antitubercular therapy, or positive for human immunodeficiency virus infection were excluded.

Procedure

Preoperative work up

After a detailed history taking and thorough clinical examination, all women underwent a complete blood count test with ESR, Mantoux test, chest radiography, and abdomen and pelvic sonogram. Endometrial biopsy in the premenstrual phase (Day 21 and Day 22) was taken in all women using a Number 4 Karman cannula. Genital TB was diagnosed by detection of AFB on smear using Ziehl–Neelsen stain, which was cultured by inoculation on Löwenstein–Jensen medium and by histopathological examination of the biopsy sample. All women then underwent diagnostic laparoscopy followed by operative procedures wherever indicated.

Laparoscopy

All laparoscopies were performed under general anesthesia by a team of three surgeons using autoclavable reusable instruments. At the time of laparoscopy, the pelvis and abdomen were visualized systematically and abnormal findings were noted. Cases with presence of tubercles, caseation, granulomas, beaded tubes, tubo-ovarian masses, fimbrial agglutination, and hydrosalpinx were considered to have TB. Red inflamed tubes and ovaries with the presence of straw-colored peritoneal fluid (pelvic inflammation) were considered suspicious for genital TB. In women with positive findings of TB on laparoscopy, endometrial biopsy was repeated during surgery and samples were sent for histopathological examination. Biopsy was performed on samples of suspicious lesions and then subjected to histopathological examination. Operative procedures such as adhesiolysis, ablation of endometriotic lesions, and cystectomy were performed in the same sitting. The samples of peritoneal fluid (10 mL) or peritoneal washings were collected from the Pouch of Douglas (POD) through a 5-mm side port using an aspiration needle and stored in deep freezer at -20°C for TB diagnostic tests.

Microbiological tests

The samples were centrifuged prior to microscopic analysis. On an average, two slides were prepared for each case and 100 fields were analyzed. Steps in the processing and analysis of fluid samples collected from the POD were the standard

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