INTRODUCTION
Tuberculosis (TB) is a curable infective disease caused by Mycobacterium tuberculosis (MTB). In recent years it has emerged as a major public health problem in developed as well as underdeveloped countries alike. The incidence of TB is growing owing to poor socio-economics, the spread of HIV infection, multi-drug resistance and poor case findings. Pakistan ranks 8th amongst the countries with highest burden of TB in the world. It has been seen that 75% patients with this disease are in their productive age group. Lung is the most common site of infection but extra pulmonary disease is becoming more prevalent. Extra pulmonary tuberculosis (EPTB) constitutes about 15-20% of all cases of TB. Pelvic-peritoneal tuberculosis is a common extrapulmonary site and a known cause of infertility and death in young healthy women if not diagnosed and treated promptly.

Pelvic-peritoneal tuberculosis presents classically with a dull abdominopelvic pain, menstrual disturbances or infertility and constitutional symptoms like low-grade fever, loss of appetite, loss of weight and lethargy. It can clinically mimic an advanced abdominopelvic malignancy in females. Lack of awareness about such atypical presentation of tuberculosis can lead to a delayed diagnosis, inappropriate treatment and increased morbidity and mortality.

Abdominopelvic imaging is often inconclusive and can be misleading. Nodular peritoneal thickening, omental involvement, ascites, adnexal masses with both solid and cystic components are more suggestive of peritoneal metastatic carcinoma or a locally advanced ovarian cancer rather than a tuberculous peritonitis. The absence of acid fast bacilli in ascitic fluid does not exclude pelvic tuberculosis, however, the presence of lymphocyte predominant exudate provides a subtle clue towards the chronic infection. Serum CA-125 levels are found to be elevated in up to 82% of women with late stage epithelial ovarian cancer. It may be elevated in several benign pelvic pathologies like uterine fibroids, endometriosis, and pelvic tuberculosis and, therefore, has a limited diagnostic value and must be interpreted with caution in any pelvic-peritoneal pathology. These findings are often ignored and lead to hasty decision in favour of laparotomy for ovarian malignancy. The final diagnosis is established by histopathology or microbiology of the tissue involved. When promptly diagnosed, it is one of the few diffuse peritoneal processes for which there is effective therapy, with excellent prognosis.

Here we present 2 cases where young unmarried females were referred from an outside medical facility to our tertiary care cancer centre with non-specific abdominopelvic features resembling an advanced pelvic malignancy.

CASE REPORT

CASE 1: A 24 years unmarried female presented in the medical oncology outpatient department with a 2 months history of abdominal pain, altered bowel movements, abdominal distension, loss of energy and loss of weight.

On clinical examination patient was a young female, weighed 48 kgs, afebrile and had distended abdomen with shifting dullness.
Her initial work-up included complete blood counts, routine chemistry, renal function tests, liver function tests and urine analysis; all of which were within normal range. Her chest X-ray was reported to have an indeterminate lung nodule. CT scan of abdomen and pelvis with contrast revealed bilateral adnexal masses 4 x 2 cm each with both solid and cystic components. The adjacent bowel loops were matted together and there was extensive omental disease with moderate ascites (Figure 1a and 1b). Serum CA-125 level was 268 U/ml (normal range 0 - 35 U/ml) while BHCG, AFP and LDH were within normal range. A diagnostic ascitic tap revealed inflammatory exudate with lymphocytic predominance but no malignant cells. In view of the adnexal mass, ascites and elevated CA-125 the probability of an advanced ovarian carcinoma was considered.

Patient underwent diagnostic laparoscopy which revealed scattered nodules all over the parietal peritoneum and surface of small and large bowel. A mass in the left adnexa was visualized and mild ascites was documented. The differential diagnosis was between disseminated miliary tuberculosis vs. carcinoma peritonium. Peritoneal biopsies were taken and histopathological examination revealed focal necrotizing granulomatous inflammation. Ziehl Neelson and GMS stains were negative on the smears and no malignant cells were found. Patient was then referred for infectious disease consultation and started on four-drug antituberculous therapy (ATT). Later the MTB culture came positive on the peritoneal tissue. After 2 months she was switched to two-drugs. Eight months on ATT, she had regained health and her CA-125 level had normalized.

CASE 2: A 23 years unmarried female was seen in the medical oncology outpatient department with one and a half months history of low grade fever, dull abdominal ache and oligomenorrhea. She had anorexia and had lost 4 kgs of weight in one month.

On clinical examination, she appeared thin, had distended abdomen with shifting dullness and fluid thrill but no palpable mass or visceromegaly. Her routine haematology, blood chemistry and urine analysis were within normal range. Her chest X-ray revealed minimal left sided pleural effusion. CT scan of abdomen and pelvis with contrast revealed a complex right adnexal mass 4 x 5 cm, moderate ascites and peritoneal strandings (Figures 3a and 3b). Diagnostic pleurocentesis and peritoneocentesis showed inflammatory exudates with lymphocytic predominance but no malignant cells or acid fast bacilli on smear and culture. CA-125 level was 253 U/ml (normal range 0 - 35 U/ml). Other tumour markers AFP, βHCG and LDH were within normal range. Suspecting an ovarian malignancy a diagnostic laparoscopy was done which revealed widespread nodules in
the peritoneum, bowel loops were matted together and right adnexal mass was difficult to separate from the right ovary. Peritoneal biopsies were submitted for histopathology which showed necrotizing granulomatous inflammation (Figures 4a and 4b). Ziehl Neelson and GMS stains were negative. Patient was started on ATT and the culture reports confirmed MTB after 8 weeks. Patient to-date is doing well and has regained her weight and energy.

**DISCUSSION**

The clinical triad of abdominal pain, ascites and adnexal mass along with raised CA-125 levels in young women should raise the suspicion of pelvic tuberculosis especially in countries with high prevalence. Considering the provisional diagnosis of ovarian carcinoma, one is prompted to undertake a radical surgery, which in the above cases and alike would be associated with both immediate and long-term morbidities. For the diagnosis of pelvic-peritoneal tuberculosis, imaging findings can be misleading and laboratory assays like the vague symptom may not help either.

Chest X-ray in all such cases should be done and looked at with suspicion for any abnormality suggestive of previous tuberculosis. In all suspected cases of pelvic-peritoneal tuberculosis the abdominopelvic CT scan show similar findings of ascites, peritoneal nodularity, mesenteric and omental thickening, cystic or solid adnexal mass which may lead to an erroneous preliminary diagnosis of disseminated ovarian cancer. Serum CA-125 levels are non-specific and may give a positive result in any abdominopelvic inflammatory condition. Ascitic fluid or pleural fluid ZN staining for acid fast bacilli may be helpful.

Various investigations have been suggested as the gold standard for the diagnosis of abdominopelvic tuberculosis but despite their clinical utility these techniques often show poor sensitivity and specificity. Diagnostic laparoscopy is safe, detects pathognomonic signs of scattered yellow white nodules on visceral peritoneum, adhesions, thickening and hyperemia of omentum and miliary granulations. The biopsies from miliary nodules or frozen section of specimens can reveal epitheloid granulomas with central caseous necrosis. According to large series studying laparoscopic evaluation combined with peritoneal biopsy, a definitive diagnosis can be established in 80-94% cases. The sensitivity of peritoneal biopsy by laparoscopy may reach up to 100%. Other methods like DNA extraction by PCR or ELI spot (enzyme linked immunospot) on the frozen section specimens obtained by laparoscopy can be helpful, but time and cost consuming.

In the past decades, numerous pelvic peritoneal tuberculoses cases were misdiagnosed as advanced ovarian cancer and young females were un-necessarily subjected to extensive surgery. There is enough data to change the clinical approach to a safer, rapid and sufficient mode of diagnostic modality for the treatment of a curable infectious disease.

**REFERENCES**