

## Ovarian Carcinoma or Abdominal Tuberculosis?—A Diagnostic Dilemma: Study of Fifteen Cases

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### Abstract

**Objective** To evaluate the clinical, laboratory, and diagnostic features in women with abdominal tuberculosis that resembled advanced ovarian malignancy.

**Methods** A retrospective review of women with abdominal tuberculosis who were managed at GCRI Ahmedabad from 1996 to 2001 was undertaken.

**Results** Fifteen patients (3.06 %) with suspected ovarian cancer cases, finally diagnosed as abdominal tuberculosis over a 6-year period (1996–2001), are analyzed. During this period, 492 patients were operated for suspected ovarian malignancy. Pre-operatively, ultrasound-guided biopsies were inconclusive in 14 cases and hence, exploratory laparotomy was planned. They underwent laparotomy and biopsy for final diagnosis. Frozen sections—of peritoneal/omental biopsies in 11 cases and ovarian tumour in three cases—were indicative of tuberculosis in all the 14 cases.

**Conclusion** The data of this study indicate that the majority of the cases with peritoneal tuberculosis can be diagnosed intra-operatively through the use of frozen

section in conjunction with clinical features. Ascites and high levels of Ca125 do not necessarily indicate that the clinical picture is malignant in reproductive women. Laparoscopic tissue biopsy may be a fundamental tool in the management of such cases to avoid extended surgery.

**Keywords** Abdominal tuberculosis · CA-125 · Adenosine deaminase · Granulomas

### Introduction

Abdominal tuberculosis mimics ovarian carcinoma by its vague symptoms and non-specific signs. Abdominal tuberculosis is still a very important cause of ascites in India.

When a patient presents with abdomino-pelvic mass, ascites and elevated CA-125 levels, ovarian malignancy is usually suspected. However, abdominal tuberculosis should always be considered in the differential diagnosis in such cases. Preoperative investigations often do not give a definitive diagnosis. In spite of thorough investigations, it may not be possible to rule out ovarian malignancy or confirm abdominal tuberculosis without exploratory laparotomy.

### Material and Methods

During a 6-year period (1996–2001), 492 patients were operated at our institute for suspected ovarian cancer. Fifteen cases (3.06 %) finally diagnosed as abdominal

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tuberculosis are analyzed. Case files of all the patients were reviewed for age, history, presenting symptoms, examination findings, ultrasonography, CA-125 levels, operative findings, and pathology reports. Fourteen out of fifteen patients underwent exploratory laparotomy. Diagnosis of tuberculosis was established based on histological evidence of caseous granulomas and typical macroscopic appearance. Histological diagnosis was achieved in all of them.

### Results (Tables 1, 2, and 3)

The mean age of the patients was 39 years (range 19–65). Four out of 15 cases were menopausal. Patients presented with abdominal pain and distension. Clinically ascites and ill-defined, irregular, nodular pelvic masses were present in all patients. Omental thickening was present in three cases, pleural effusion was present in four cases, and retroperitoneal lymphadenopathy was seen in four cases. Pre-operative serum CA-125 levels were elevated in all patients. Levels were marginally elevated in two cases, and one case had CA-125 as high as 1600 U/ml. 46.67 % of patients had CA-125 levels between 100–400 U/ml. All these findings favored the provisional diagnosis of ovarian malignancy.

Abdominal paracentesis was performed in the diagnostic work-up of nine cases, but was inconclusive. Pleural fluid cytology was performed in two cases but it was also inconclusive. Ultrasound-guided biopsy from pelvic mass was done in four cases and was negative for malignancy. In one case, it revealed tuberculosis.

Fourteen out of 15 cases were posted for exploratory laparotomy considering diagnosis of ovarian malignancy. One patient in whom pre-operative biopsy revealed tuberculosis was treated with anti-tuberculous drugs. Miliary tuberculosis with peritoneal thickening, omental cake formation, multiple dense adhesions, and pseudo cysts

**Table 1** Age distribution

Age	Cases	Percentage
<30	5	33.3
31–50	6	40
>50	4	26.7

**Table 2** Preoperative CA-125 level

Pre-operative-CA 125 U/ml	Cases	Percentage
35–100	4	26.67
101–400	7	46.67
401–800	2	13.33
801–1600	2	13.33

**Table 3** Radiological Findings

Radiological findings	No. of cases	Percentage
Ascites	15	100
Pelvic mass	15	100
Omental thickening	3	20
Cystic lesion in adnexa	8	53
Pleural effusion	4	26
Retroperitoneal lymphadenopathy	3	20

formation over intestines was discovered intra-operatively. During surgery, frozen section was performed, and diagnosis of granulomatous disease was confirmed in all 14 cases. In 11 cases, omental/peritoneal biopsies confirmed the diagnosis. In the remaining three cases, frozen section of the ovarian tumor revealed tuberculosis. In two of these, hysterectomy was performed before the frozen section report was available.

All patients received standard anti-tubercular treatment consisting of Isoniazid, Ethambutol, Rifampicin, and Pyrazinamide for the first 2 months and two-drug therapy for 4–8 months. Postoperative period was uneventful in 13 patients. One patient died due to myocardial infarction in immediate postoperative period. In one patient, ultrasound-guided biopsy was suggestive of tuberculosis and serum IgG, and IgM was marginally positive. She was treated with anti-tubercular drugs. On follow-up, she had a marked improvement in general condition and a decrease in size of pelvic mass on sonography.

### Follow Up

All patients were regularly followed every 2 months with serum CA-125, clinical examination, and ultrasound. Serum CA-125 levels gradually normalized over a period of 1–6 months. Abdominal masses also regressed completely. Patients were regularly followed for at least 1 year.

### Discussion

Abdominal tuberculosis is one of the common sites of extra pulmonary involvement (11 %) [1]. The protean clinical manifestation and varied complications of abdominal tuberculosis continue to challenge the diagnostic acumen and therapeutic skills of all physicians [2]. Abdominal tuberculosis can occur at any age, but it is predominantly a disease of young adults with the mean age of patients being 30–40 years. Peritoneal tuberculosis mostly presents with non-specific signs and symptoms like pain in abdomen, ascites, and abdomino-pelvic lump, and hence mimics

ovarian malignancy [3]. Ideally, surgical interventions in suspected ovarian malignancies should be performed by surgeons familiar with the surgical treatment and staging of ovarian carcinoma. However, preoperative discrimination between advanced ovarian carcinoma and peritoneal tuberculosis may not be easily accomplished. In our study, paracentesis was done in nine cases and ultrasound-guided biopsy in four cases. In only one case did the biopsy reveal tuberculosis. An elevated serum CA-125 level in a patient with pelvic mass raises suspicion of ovarian cancer. However, many benign as well as malignant conditions other than carcinoma ovary may cause rise in CA-125 levels. Ultrasound and CT scan may not help in reaching conclusive diagnosis. However, there are a few studies showing role of CT scan in preoperative diagnosis of tuberculosis. The CT abnormalities that proved to be most useful for distinguishing between the two processes were observed in the parietal peritoneum. The presence of a smooth peritoneum with minimal thickening and pronounced enhancement suggests peritoneal tuberculosis, whereas nodular implants and irregular peritoneal thickening suggests peritoneal carcinomatosis [4].

Direct preparation of ascitic fluid for acid fast bacilli may not be helpful. Guinea pig inoculation and culturing for tuberculosis take 6 weeks' time which may cause detrimental delay in treatment of ovarian malignancy. Polymerase chain reaction (PCR) for mycobacterium may be helpful in obtaining results, but this technique is not widely available [4]. Ascitic fluid adenosine deaminase (ADA) activity has been proposed as a useful diagnostic test for abdominal TB. However, these tests may not yield a definite diagnosis. In countries with a high incidence of TB and in high risk patients, measurement of ADA in ascitic fluid might be a useful screening test.

Clinical suspicion is of the most assistance in making a timely diagnosis of intra-peritoneal tuberculous disease in at-risk patients, especially young immigrants from high-prevalence areas or immune-compromised individuals. Tuberculosis should be considered in the differential diagnosis when a female patient has symptoms and sonographic findings, which are otherwise consistent with an ovarian neoplasm.

## Conclusion

This case series demonstrates misdiagnosis between advanced ovarian cancer and peritoneal tuberculosis.

The data presented in this study indicate that the majority of the cases with peritoneal tuberculosis can be diagnosed intra-operatively through the use of frozen section in conjunction with clinical features. Ascites and high levels of CA-125 do not necessarily indicate malignancy in reproductive women. Serum CA-125 levels are not helpful in the differential diagnosis of such cases, but assist in the follow-up after anti-tubercular treatment is started. After the experience obtained from the present study, if thorough preoperative diagnosis and repeated biopsies were negative for ovarian malignancy, then we started suspecting peritoneal tuberculosis. In such cases, with repeated preoperative biopsies negative for malignancy, patients were thoroughly counseled regarding possibility of tuberculosis and empirical nature of anti-tubercular therapy. Most patients agreed for anti-tubercular therapy and responded to it. Thus, laparotomy could be avoided in many cases of abdominal tuberculosis. Polymerase chain reaction (PCR) of ascetic fluid for mycobacterium is considered a reliable method for diagnosis and should at least be attempted before surgical intervention [5]. Laparoscopic tissue biopsy is now a fundamental tool in the management of such cases to avoid extended surgery.

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