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Original Article

Disseminated peritoneal tuberculosis simulating advanced ovarian cancer: A retrospective study of 17 cases

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Abstract

Objectives: The abdominopelvic cavity is one of the common sites for extrapulmonary tubercular infections. The rate of preoperative misdiagnoses between peritoneal tuberculosis (TB) and ovarian cancer is high because of overlapping nonspecific signs and symptoms. We attempted to analyze the experience within our hospital so as to establish the best means of discriminating between peritoneal TB and advanced ovarian cancer.

Methods: Seventeen patients diagnosed as having peritoneal TB between July 1986 and December 2008 at the Obstetrics and Gynecology Department of our hospital with the initial presentation simulating advanced ovarian cancer were retrospectively reviewed and evaluated.

Results: Patients' ages ranged from 24 years to 87 years (median, 38 years). Ten of 17 patients (60%) were younger than 40 years. All patients except one had elevated serum cancer antigen-125 levels with a mean of 358.8 U/mL (range, 12–733 U/mL). Computed tomographic (CT) scans showed ascites with mesenteric or omental stranding in all (100%), enlarged retroperitoneal lymph nodes in six (35.3%), and an adnexal mass in three (17.6%). Abdominal paracentesis was performed in seven cases, in which the findings revealed lymphocyte-dominant ascites without malignant cells. Surgical intervention by laparotomy was performed in 13 cases (76%) and by laparoscopy in three cases (18%), and a CT-guided peritoneal biopsy was performed in one case (6%). A frozen section was taken from 16 patients but not the patient who received a CT-guided peritoneal biopsy, and all revealed granulomatous inflammation. A final pathological examination confirmed a diagnosis of peritoneal TB. All patients responded to anti-TB treatment.

Conclusions: In view of these data, a clinical diagnosis of peritoneal TB should be considered in a relatively young female with nonspecific symptoms of abdominal distension and wasting, as well as lymphocytic ascites without malignant cells. Laparoscopy or a minilaparotomy to obtain tissue samples for frozen-section analysis may be the most direct and least-invasive approach for a diagnosis, thus avoiding unnecessary extended surgery in these patients.

Keywords: Ascites; CA-125; Extrapulmonary tuberculosis; Ovarian cancer; Peritoneal tuberculosis

Introduction

According to the US Centers for Disease Control and Prevention, nearly one-third of the world's population is infected with tuberculosis (TB), which kills almost 2 million people per year [1]. With the development of effective anti-TB agents and improvements in environmental hygiene and immunity, active TB cases decreased year by year from 1950 to 1980. However, increasing population migration, use of more potent immunosuppressant therapies, the presence of an acquired immunodeficiency syndrome epidemic, and the appearance of highly virulent multidrug-resistant strains of *Mycobacterium tuberculosis* resulted in a resurgence of this disease worldwide after 1980 [2].

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Extrapulmonary TB is less common than pulmonary TB, and the peritoneum is one of the most common extrapulmonary sites of tuberculous infections. The postulated mechanisms by which the tubercular bacilli reach the peritoneal cavity are by hematogenous spread or by direct spread from the contiguous infected small intestine, lymph nodes, and fallopian tubes [3]. The most common symptoms and signs of female patients with peritoneal TB are abdominal pain, wasting, fever, loss of appetite, abdominal distension with ascites, and elevation of the serum cancer antigen (CA)-125 level; these symptoms overlap with those of advanced ovarian carcinoma [3,4].

Diagnosing this disease remains a challenge because of its insidious nature, the variability of its clinical presentation, and the limitations of available diagnostic tools. Fortunately, the treatment regimens for tuberculous peritonitis use the same principles as those for pulmonary TB. A good prognosis is expected with an early diagnosis, except for patients at an advanced age and with a poor medical condition, such as renal failure and liver cirrhosis [5]. Therefore, in this study, we attempted to analyze the experience within our hospital so as to establish the best means of discriminating between peritoneal TB and advanced ovarian cancer.

Materials and methods

We retrospectively examined the medical records of patients with peritoneal TB that mimicked advanced ovarian cancer who were managed at the Obstetrics and Gynecology Department of Chang Gung Memorial Hospital—Kaohsiung Medical Center, Taiwan, over a period of 22 years between July 1986 and December 2008. In total, 27 patients were diagnosed as having peritoneal TB according to pathology reports, and 17 of them presented with initial symptoms and signs that were similar to those of advanced ovarian cancer. Patients diagnosed as having peritoneal TB but not simulating advanced ovarian cancer were not included in the present study. We analyzed those 17 patients' clinical presentations; findings on pelvic examination; laboratory results; CA-125 levels; chest radiographic findings; examination of ascites; imaging studies, such as ultrasonography and computed tomography (CT); and diagnostic procedures. The diagnosis was confirmed on the basis of at least one of the following criteria, as advocated by Pauslian et al [6]: (1) histological evidence of caseating granulomatous inflammation; (2) acid-fast bacilli identified in tissue specimens or ascitic fluid; (3) tissue or ascitic fluid culture yielding *M tuberculosis*; (4) positive polymerase chain reaction (PCR) for *M tuberculosis* DNA on tissue specimens or ascitic fluid; or (5) a good therapeutic response to anti-TB agents in patients with clinical evidence of peritoneal TB. All data were obtained from patients' files and pathology reports. This study was approved by the Research Ethics Committee of Chang Gung Memorial Hospital (Institutional Review Board No. 98-2016B).

Results

In total, 17 patients with a documented diagnosis of peritoneal TB simulating advanced ovarian cancer were identified. All of our patients were Taiwanese women with a median age of 38 years (range, 24–87 years). More than half of the peritoneal TB (10 of 17, 59%) was found in patients aged between 20 years and 40 years, and most patients (82.4%) were multiparous, whereas only three patients (17.6%) were nulliparous.

Clinical features

Abdominal pain and pronounced weight loss appeared to be the most common presenting features among these 17 patients, and three of them (17.6%) also reported fever and night sweats (Table 1). All patients had a clinical evidence of ascites, along with thickening or ill-defined nodularities in the Douglas pouch and/or in the adnexal areas on a pelvic examination, but only three (17.6%) had the suggestion of an adnexal mass of around 4–6 cm in diameter. Five patients received a lower gastrointestinal series examination because of symptoms of bowel habit change, but only one patient had a clinical evidence of bowel obstruction. The possibility of peritoneal TB was suspected at presentation in only three patients (17.6%).

Laboratory findings

Changes in hematological indices were nonspecific except for mild normochromic, normocytic anemia with a mean hemoglobin level of 10.7 g/dL noted. All patients except one

Table 1
Characteristics of the 17 cases with peritoneal tuberculosis

Clinical parameters	No.	%
Clinical symptoms/signs		
Abdominal pain/fullness, wasting	17	100
Fever	3	17.6
Chest X-ray findings		
Normal	10	58.8
Pleural effusion	5	29.4
Suspected pulmonary TB	2	11.8
CT image findings		
Ascites & mesenteric/omental stranding	17	100
Adnexal mass	3	17.6
Enlarged retroperitoneal nodes	6	35.3
Diagnostic approach		
Laparotomy	13	76.5
Diagnostic laparoscopy	3	17.6
CT-guided biopsy	1	5.9
Frozen section[a]	16	
Granulomatous inflammation	16	100
Acid-fast bacilli on permanent section	17	
Positive	12	71
Negative	5	29
PCR assays for *Mycobacterium tuberculosis*	2	
DNA in ascites		
Positive	0	0
Negative	2	100

[a] Among 17 patients, only one received CT-guided biopsy, and all the other 16 underwent surgical intervention.
CT = computed tomography; PCR = polymerase chain reaction; TB = tuberculosis.