

Case Report

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Extensive surgery for peritoneal tuberculosis, an ongoing diagnostic challenge in resource limited setup**Richard Kiritta^{1*}; Fatma Mrisho¹; Cosmas Mbulwa²; Andrea Solnes Miltenburg³; Albert Kihunrwa¹**¹Department of Obstetrics and Gynecology, Bugando Medical Centre, Catholic University of Health and Allied Sciences, Mwanza, Tanzania.²Central Pathology Laboratory, Bugando Medical Centre, Catholic University of Health and Allied Sciences, Mwanza, Tanzania.³Department of Obstetrics and Gynecology, Akershus University Hospital, Lorenskog, Norway.***Corresponding Author: Richard Kiritta**

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Abstract

Background: Peritoneal Tuberculosis is an abdominal form of Tuberculosis that affects the peritoneal cavity and enclosed organs. Clinical presentation of this rare form of extrapulmonary tuberculosis resembles that of advanced ovarian cancer and may results in unnecessary extensive surgery especially in resource limited setting.

Case presentation: A case of a 36 years old prisoner who presented to us with gradual onset of abdominal distension for one-month, mild abdominal pain and noticeable progressive weight loss. Physical examination revealed she was underweight, afebrile and had a healed sub umbilical median incision scar on a glossily distended abdomen with positive fluid thrill and shifting dullness. She was HIV negative, anemic and had marked elevation of Cancer Antigen 125 marker. Abdominal ultrasound scan showed ascites with multiple cysts originating from the left iliac fossa and the abdominal pelvic CT scan showing left ovarian cyst, ascites of 3 litres and diffuse peritoneal carcinomatosis. Advanced ovarian cancer was suspected and intra-operatively 2.5 liters of straw colored ascitic fluid was found, the bowels and the omentum were covered with diffuse intestinal nodules and multiple inclusion cysts occupying the pelvic cavity. Histopathological analysis of sampled tissues revealed Peritoneal Tuberculosis.

Conclusion: Peritoneal tuberculosis shares similarities in presentation to advanced ovarian cancer and should be ruled out in a woman suspected of ovarian cancer before proceeding with surgery. For proper differentiation of the two, histopathological analysis of sampled tissue through frozen section biopsy is the preferred approach in resource limited setup where laparoscopic biopsy or ultrasound guided biopsy is not feasible.

Keywords: Tuberculosis; Extrapulmonary Tuberculosis; Peritoneal Tuberculosis; CA-125; Laparotomy; Histopathology.

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Introduction

Peritoneal Tuberculosis is a form of Extrapulmonary Tuberculosis that affects the peritoneal cavity and its enclosed organs. Like other form of EPTB, its clinical presentation is nonspecific and often mimics the presentation of advanced ovarian cancer. We present a case of Peritoneal Tuberculosis that we believe might be among many that undergo unnecessary extensive surgery under the presumptive diagnosis of ovarian cancer either due to lack of awareness of the condition or diagnostic limitations especially in resource limited setup like ours. We describe the clinical presentation, diagnostic modalities, challenges in making pre-operative diagnosis and the management plan for such a case.

Case presentation

We present a case of a 36 years old nulliparous lady, a prisoner who was referred to our facility 6 months after undergoing laparotomy for a suspected pelvic mass at a peripheral facility. In this current admission, she presented with abdominal distension which started gradually 1 month after the first surgery, mild abdominal pain and noticeable progressive weight loss. Six months before the current admission she was diagnosed to have a uterine myoma and underwent Total Abdominal Hysterectomy at the referring facility, full recovery was established and the patient was discharge home.

During the course of the current admission, she had undergone ascitic tapping twice at the periphery facility to relieve her of pressure symptoms however no analysis was done on the fluid that was removed. In her current admission, physical examination revealed a middle-aged lady, underweight with a Body Mass Index of 16.5 kg/m², afebrile at 37.4°C, and a blood pressure of 110/65 mmHg. Abdominal examination revealed a healed sub umbilical median incision scar on a glossily distended abdomen that had a positive fluid thrill and shifting dullness. Her blood work showed she was HIV negative, had mild anemia of 9.3 g/dl with normal leukocytes, normal range of renal and liver function test parameters for her age, and elevated Cancer Antigen 125 level of 366 ng/dl (normal range (0-35 ng/dl)). Abdominal Ultrasound Scan showed massive ascites and multiple pelvic cysts with the largest measuring 5 X 4 cm originating from the left iliac fossa. The patient was taken for an abdominal pelvic CT scan which showed a left ovarian cyst of 4.76 X 5.46 X 6.7 cm with ascites of 3 litres. A provisional diagnosis of advanced stage ovarian cancer was made from the above-mentioned workout and patient was planned for explorative laparotomy and surgical staging. Intraoperatively 2.5 liters of straw colored ascitic fluid was found, the bowels and the omentum were covered with diffuse intestinal nodules (Figure 1) and multiple inclusion cysts with the largest approximately measuring 4 X 3 X 4 cm were also seen in the pelvic cavity enclosing the left ovary, the uterus was not present as it had been removed in the first surgery, the right ovary appeared normal. Complete surgical staging was done, ascitic fluid taken for cytology and gene expert while the sampled tissues were submitted for histopathological analysis. Gene expert for ascetic fluid taken was negative while tissue biopsy stained with H and E showed peritoneal tissue composed of focal areas of caseous necrosis, numerous langhans giant cells, histiocytes and lymphocytes, all suggesting peritoneal Tuberculosis (Figure 2 & 3).

Two weeks after laparotomy, the patient was seen at the TB clinic and antituberculosis drugs were initiated. A combination of isoniazid, rifampin, ethambutol and pyrazinamide was given for the first two months of intensive treatment phase followed by four months of continuous treatment phase that the patient was on rifampin and isoniazid. Marked improvement was seen during the course of treatment and she was finally discharge from TB-clinic 2 weeks after completion of her medication, on the day of discharge her body weight had slightly increased, had no fever, no abdominal distension, no ascites or tenderness.

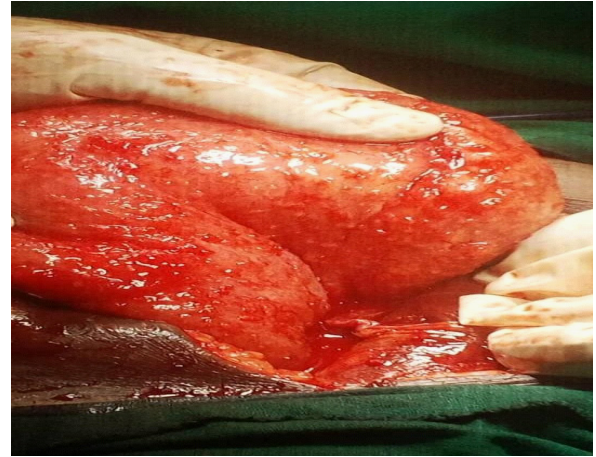


Figure 1: Inflamed bowels with diffuse multiple small nodules in the peritoneum, omentum, small and large bowel loops and the pelvic walls.

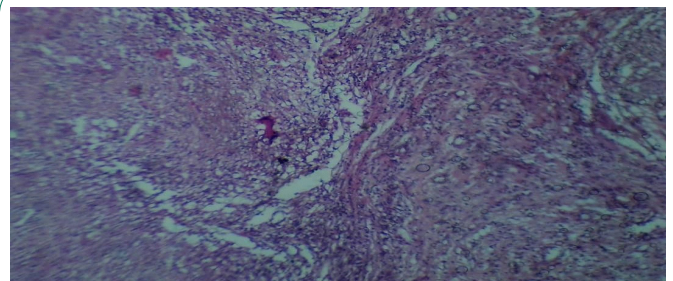


Figure 2: Under H and E-stained section showing peritoneal tissue composed of focal areas of caseous necrosis, numerous langhans giant cells, histiocytes and lymphocytes (10 X 100 LPF).

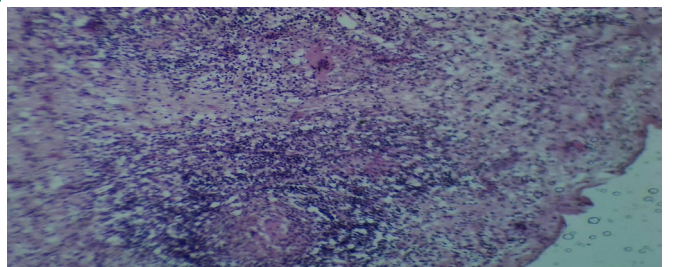


Figure 3: Under H and E-stained section shows peritoneal tissue, composed of granulomatous inflammation, langhans giant cells lymphocytes and histiocytes infiltration. (20 X 100 MPF).

Discussion

Tuberculosis is a chronic granulomatous disease caused by *Mycobacterium Tuberculosis* [1]. It is a disease that commonly affects young adults in areas where social and economic determinants of ill health prevail, with 95% of deaths occurring in the developing world [2]. Tuberculosis mainly affects the lungs leading to Pulmonary Tuberculosis which is the most transmissible form of the disease, but tubercle bacilli can spread to other parts of the body and cause Extra- Pulmonary Tuberculosis (EPTB) [3]. Globally, tuberculosis incidence rates have been on the decline since 2001 with absolute number of incident cases starting to fall slowly since 2000 [4], however, the rate of EPTB in particular has not been decreasing in most parts of the world [5].

Close contact with a Tuberculosis infected person, being a health care workers, overcrowding and indoor air pollution are recognized risk factors that may increase exposure to contracting Tuberculosis while malnutrition, HIV infection, cigarette smoking and diabetes mellitus may increase progression to infection upon exposure [6,7]. The patient presented in this case, like in other related case [8] did not have any co morbidities that could interfere with her immunity, however being an inmate (prisoner) in a correction facility in Tanzania increases an individual's risk of contracting Tuberculosis [9], as is documented in other settings across Africa [6,10].

Unlike clinical presentation of PTB, the presentation of EPTB is usually so protean that diagnosis and identification is often delayed, and requires special clinical alertness to recognize the condition [11]. This was evident in our patient's case in which an extensive surgery was done to a patient under the presumptive diagnosis of advanced ovarian cancer rather than peritoneal tuberculosis due to difficulties in diagnosis. Peritoneal Tuberculosis is an abdominal form of Tuberculosis that affects the intestinal tract, liver, spleen, female genital tract, the omentum, the parietal and visceral peritoneum. It represents 1-2% of all forms of TB [12,13]. Fever, abdominal pain, abdominal swelling with ascites and weight loss are among prominent features for peritoneal tuberculosis [14], however advanced ovarian cancer may share some of these clinical presentations, making differentiation of these two conditions necessary for proper case management. The patient in this case presented with abdominal swelling with ascites, mild abdominal pain and history of weight loss, all together of which were pointing towards the diagnosis of ovarian cancer or peritoneal tuberculosis.

Several laboratory blood work ups and imaging investigations are often utilized to help a clinician arrive to the correct diagnosis. CA 125 was found to be significantly elevated in our patient. This protein produced by ovarian surface epithelium has been used for surveillance of development of ovarian cancer and to monitor response of chemotherapy for ovarian cancer [15]. However, CA125 is not specific to ovarian cancers as it is found to be elevated in different benign and malignant conditions like pregnancy, endometriosis, uterine fibroid, pancreatitis and liver cirrhosis. Peritoneal derived CA125 significantly contributes to circulating CA125 and may cause the levels to rise in conditions that cause peritoneal irritation, as it may occur with hyperstimulation of the peritoneum, salpingitis, ruptured ectopic pregnancy, and peritoneal inflammation. The raised CA125 in our case was more likely a result of peritoneal irritation and inflammation by tuberculosis and not ovarian cancer as was observed in other related cases [16,17], highlighting the restriction on the use of CA 125 as a single diagnostic tool.

Abdominal pelvic CT scan on our patients revealed a left ovarian cyst and massive ascites, features that highly suggested a malignancy appearance. Similar observation was made in abdominal pelvic CT scan results in some other cases, all of which suspected ovarian malignancy [16,18]. Our image findings further concur with the observation that radiologic imaging techniques are not sensitive or specific for diagnosing peritoneal tuberculosis [19,20].

Diagnostic laparoscopy aiming at obtaining tissue sample for frozen-section analysis is currently the best, direct and least invasive procedure that can assist a clinician arriving to the correct diagnosis and avoid extensive surgery [17,21]. However, in our case, and few other related cases that occurred in resource scarce setting, equipment and human resource limitation resulted in failure to do diagnostic laparoscopy or frozen-section analysis respectively, resulting into an extensive surgery on suspicion of ovarian cancer. Peritoneal biopsy under percutaneous radiological guidance offers an alternative to surgery by providing a minimally invasive method in diagnosing peritoneal tuberculosis with minimal complications [22].

Ascites, small nodules in the peritoneum, omentum, small bowel loops, uterus and the pelvic walls together with adhesions between bowel loops are some of the noted macroscopic findings in peritoneal tuberculosis [16,23]. These findings are often noted in advance ovarian cancer and warrant additional analysis to avoid misdiagnosing these two conditions. Massive ascites, diffuse intra-abdominal nodules and multiloculated cysts on the left adnexa were observed in our patient's case, and as of such additional analysis was requested.

Acid fast bacilli, Ziehl-Neelsen staining and Gene expert of aspirated ascitic fluid all came back negative for tuberculosis in our patient's case. Our findings further highlight the reported low sensitivity rates of acid-fast bacilli and Ziehl-Neelsen staining in detection of Tubercle bacilli in ascitic fluid [24-26], and the poor sensitivity and specificity of Gene expert in detection of abdominal TB from ascitic fluid samples [27]. The diagnosis of peritoneal tuberculosis in our case, like other related cases [17,18] was made through histological examination of intraoperative collected tissue samples, further stressing the need of pathological examination of samples as the gold standard for definitive diagnosis of peritoneal tuberculosis [28,29]

Abdominal tuberculosis is generally responsive to medical treatment. Isoniazid, rifampin, pyrazinamide, ethambutol, and streptomycin are the five common first line medication for treatment of Tuberculosis with treatment duration consisting of a four-drug regimen administered for 2 months then continuation of treatment with rifampin and isoniazid for 4 or more months [30]. In our patients' case, Isoniazid, rifampin, ethambutol and pyrazinamide were given for the first two months followed by isoniazid and rifampin for four months.

Though some authors are recommending longer treatment duration for up to twelve months [31,32], retrospective series [33] have seen no evidence to support such a recommendation because majority of patients are cured with the treatment regime of six months, as marked by resolution of symptoms and disappearance of ascites [30] as was seen in our patients' case.

Conclusion

Lack of awareness and resource limitation offers diagnostic challenges for Peritoneal Tuberculosis in developed and less developed world respectively. High degree of suspicion is required

to diagnose Peritoneal tuberculosis due to shared similarities in presentation to advanced ovarian cancer. Histology results to rule out the possibility of Peritoneal Tuberculosis through frozen section or mini laparotomy should be obtained before proceeding with extensive surgery especially in reproductive aged women suspected of having advanced ovarian cancer.

Patient's perspective: The care provided was timely with full explanation of the diagnosis and prognosis and with a follow-up plan explained.

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Timeline: The patient was admitted on January 2020 were clinical workout and management was initiated immediately. Surgery was done on the 7th days post admission after which she stayed in the ward for one week for post-surgical care then discharged through medical outpatient Tuberculosis clinic where anti Tuberculous treatment was initiated and follow up continued. Preparation and completion of the case report took 3 months, with the case presented in Gynecology department.

Authors' contributions: RK and FM played equal roles in the preparation of this case report. The other coauthors contributed to the management of the patient and the writing of the case report. All authors read and approved the final manuscript.

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Ethics approval, consent to participate and publish: Written informed consent was obtained from the patient for publication of this case report and related images. A copy of the written consent is available for review by the Editor-in-Chief of this journal. Additionally consent was sought and ethical clearance number CREC/441b/2020 was granted by the joint Catholic University of Health and Allied Sciences/ Bugando Medical Centre Research and Ethical review committee.

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