

## Abdominal tuberculosis presenting with massive ascites: A case series

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### Abstract

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**Background:** The abdomen is the sixth most common site of extra-pulmonary tuberculosis. The clinical manifestations of abdominal tuberculosis are varied and non-specific. It is known to mimic a variety of abdominal disorders and may be missed, leading to delay in appropriate management and poor prognosis. We describe massive ascites in three patients with abdominal tuberculosis.

**Methods:** Case records of three patients admitted to the medical wards of the University of Benin Teaching Hospital (UBTH) with complaints of cough, abdominal swelling and marked weight loss were reviewed.

**Results:** Diagnosis was made in all three cases with the ascitic fluid yielding *Mycobacterium tuberculosis* on Ziehl Nielsen staining. Histology of the peritoneal tissue in the patients

showed centre areas of caseations, aggregates of epithelioid cells, rim of lymphocytes, Langhans giant cells and fibroblasts which were in keeping with features of tuberculosis. All patients were treated using four anti-tuberculosis drugs and they responded to the treatment. In one of the three however, the patient required laparotomy.

**Conclusion:** Patients who present with non-specific abdominal symptoms and massive ascites should be investigated for abdominal tuberculosis.

**Keywords:** Abdominal tuberculosis, Massive ascites, *Mycobacterium tuberculosis*, Nigeria.

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### Introduction

Tuberculosis (TB) is a common disease throughout the tropics with prevalence rates exceeding 100 per 100,000 in sub-Saharan Africa, the India subcontinent and the Asia-Pacific region<sup>1</sup>. Tuberculosis is an infectious disease caused by mainly *Mycobacterium tuberculosis* in Nigeria. *Mycobacterium bovis*, *Mycobacterium africanus*, *Mycobacterium microtic*, *Mycobacterium canetti* are noted causes of TB in other parts of Africa<sup>2</sup>. *Mycobacterium tuberculosis* and *bovis* (ingestion) are implicated in the aetiology of abdominal tuberculosis globally<sup>3</sup>.

The abdomen is the sixth most common site of extra-pulmonary tuberculosis. Kapoor *et al* referred to abdominal tuberculosis as a great mimic<sup>4</sup>. This disease is known to affect commonly the peritoneum, intestine and the mesenteric lymph nodes. The most commonly involved area in the gastro-intestinal tract is the ileocecal region and the terminal ileum. Though rare, tuberculosis of the gall bladder and pancreas has also been reported<sup>5</sup>. Abdominal tuberculosis can co-exist with pulmonary tuberculosis.

The common presenting symptoms and signs of

abdominal tuberculosis include chronic abdominal pain, weight loss and fever<sup>6</sup>, malaise and night sweats. Massive ascites is that ascites that is directly visible and can be confirmed with fluid thrill test.<sup>7</sup> There is paucity of information on the association of massive ascites and abdominal tuberculosis. We describe the presentation of massive ascites in three patients who were found to have abdominal tuberculosis.

### Case 1

A 23-year-old female, student of a tertiary institution in Nigeria was admitted into the female medical ward of the University of Benin Teaching Hospital (UBTH) with complaints of abdominal pain, abdominal distension and constipation of 12 months duration. She also had a history of vomiting of one week duration. Abdominal pain was sharp, colicky and was recurrent with pain free intervals of 2 weeks. Abdominal distention was of insidious onset, and progressive. There was no associated history of facial or leg swelling. The constipation was also of insidious onset. Her bowel movement changed from once daily to once weekly in the past 12 months; stools passed were hard and did not contain blood. Vomiting started a week prior to presentation, consisting of recently ingested meals and averaged twice per day. She had history of night sweats and had lost weight. She had not been previously treated for tuberculosis. She had not also taken tobacco in any form and did not drink alcohol.

On examination, patient was found to be pale, anicteric, not cyanosed, with no peripheral lymphadenopathy, no finger clubbing and no pedal

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oedema. Examination of the cardiovascular and respiratory systems was essentially normal. Abdominal examination revealed the presence of ascites (abdominal girth 120cm); bowel sound was hyperactive. A digital rectal examination done showed a normal anal sphincter tone with normal coloured but hard faeces. Examination of the central nervous system was also normal. A diagnosis of abdominal tuberculosis was made. Laboratory features are as summarized in the Table 1.

Table 1: Laboratory features of patients with abdominal tuberculosis

Parameter	Patient 1	Patient 2	Patient 3
1 PCV	34%	37.3%	28.5%
2 WBC	12,080 cells	10,450 cells	9,750 cells
3 ESR	90mm/hr	103 mm/hr	150 mm/hr
4 HIV	Negative	Negative	Negative
5 HBV	Negative	Negative	Negative
6 HCV	Negative	Negative	Negative
7 Mantoux test	15 mm	17 mm	12 mm
8 Chest radiograph	Normal	Fibrocystic lesions in the right upper lung	Fibrocystic lesions with cavitation in the left upper lung zone
9 Ascitic fluid albumin	3.8 g/dl	3.6 g/dl	4.2 g/dl
10 Ascitic fluid globulin	1.7 g/dl	2.5 g/dl	2.6 g/dl
11 Ascitic fluid AFB	Positive	Positive	Positive
12 Electrocardiograph	Normal	Normal	Normal
13 Lymphocyte cell	28.1%	56%	62%
14 Histology of peritoneum	Granuloma formation, Caseous necrosis, Aggregates of epithelioid cells	Caseous necrosis, lymphocytes, Langan giant cells	Granuloma formation, Caseous necrosis and Langhans giant cells
15 Echocardiography	Normal	Normal	Normal

With the diagnosis of abdominal tuberculosis made, she was put on anti-tuberculosis chemotherapy consisting of Ethambutol tablets 800mg, Pyrazinamide tablets 1.5gm, Rifampicin capsule 600mg and Isoniazid tablets 300mg; all taken daily. In addition, she had 25 mg of Pyridoxine taken orally and daily.

The abdominal distension however increased with associated discomfort inspite of the anti-tuberculous chemotherapy and weekly abdominocentesis. On the 16<sup>th</sup> day of admission she complained of excessive pain over her umbilicus and associated brownish discharge. She was subsequently taken to the theatre for exploratory laparotomy. At surgery, a lax anterior abdominal wall, granular parietal peritoneum covered with brownish pigmented membrane was found. She had excision of peritoneal tissue and drainage of peritoneal fluid. In addition, 3.8 liters of brownish ascitic fluid was removed. In all, she had 19.4 liters of ascitic fluid drained.

The histology of excised peritoneal tissue showed

features of chronic inflammation and with no evidence of malignancy. She also had intravenous Metronidazole 500mg 8 hourly for ten days. She continued on her anti-tuberculosis drugs which she completed.

She responded to the therapy and was discharged home after thirty one (31) days on admission. Her abdominal girth returned to normal. She had since been reviewed at the Chest Clinic and General Surgery Clinic. She has also completed her anti-tuberculosis chemotherapy for 6 months.



Figure 1: Patient (case 1) with massive ascites

### Case 2

A 29-year-old unemployed lady was referred from a secondary health facility with complaints of recurrent cough, abdominal swelling and amenorrhoea of 9 months duration. Cough was non productive of sputum. There was associated right sided pleuritic chest pain, dyspnoea, low grade fever, weight loss and drenching night sweats. The abdominal swelling was progressive and of insidious onset. There was no history suggestive of intestinal obstruction. She denied any contact with persons with history of chronic cough. Review of systems was essentially normal.

Physical examination revealed a chronically ill-looking lady who was neither pale nor jaundiced. She however had grade two finger clubbing and bilateral pitting pedal oedema up to the mid-shin. She had a pulse rate of 108 beats per minute, of normal volume and character. Her blood pressure was 126/82 mm Hg with first and second heart sounds only. Her chest examination showed a respiratory rate of 16 cycles per minute with vesicular breath sounds. The abdominal examination showed the presence of ascites with a girth of 108 cm. The central nervous examination was normal. A diagnosis of pulmonary tuberculosis and abdominal tuberculosis was made and to rule out abdominal tuberculosis. Laboratory features are as summarized in the Table 1.

With the diagnosis of disseminated tuberculosis made, she was put on anti-tuberculosis drugs consisting of four drugs namely Ethambutol 800 mg, Pyrazinamide

1.5 gm, Rifampicin 600 mg, Isoniazid 300 mg all taken orally once daily. Pyridoxine 25 mg was added. She had paracentesis on three occasions and had 18.5 litres of ascitic fluid drained. She did well and after twenty seven days on admission, was discharged home. She had treatment for 6 months and has since been seen in the medical outpatient clinic.

### Case 3

A 25-year-old unemployed male presented to the Accident and Emergency ward of the UBTH, Benin City with a history of cough, abdominal swelling and marked weight loss of two months duration. Cough was productive of purulent sputum and with no haemoptysis. The abdominal swelling was progressive and in addition, he experienced low grade fever and drenching night sweats. He had lost significant weight and this was evidenced by loosening of his previously fitted clothes. He was also not on chronic steroid medication. There was no history suggestive of intestinal obstruction. His past medical history was not contributory.

Physical examination revealed an acute ill looking man who was neither pale nor jaundiced; he had no pedal oedema. He had a tachycardia of 112 beats per minute, a blood pressure of 128/84 mm Hg with first and second heart sounds only. Examination of the chest revealed a respiratory rate of 18 cycles per minute with crepitations in the left upper lung zone. The abdominal examination revealed an abdominal girth of 120 cm and presence of massive ascites (demonstrable with fluid thrill technique). The central nervous system examination was normal. A diagnosis of pulmonary and abdominal tuberculosis was made. Laboratory features are as summarized in the Table 1.

He was commenced on anti-tuberculosis therapy (Ethambutol 800mg, Pyrazinamide 1.5gm, Rifampicin 600 mg and Isoniazid 300mg, all taken orally once daily) in addition to pyridoxine 25 mg. He had drainage of the ascitic fluid on four occasions. Fifteen litres of fluid was drained in all. He responded to the therapy and was discharged home after 21 days of admission. His treatment lasted for 6 months and has been reviewed on follow up on two occasions after discharge.

### Discussion

These three cases illustrate the association of massive ascites in patients with abdominal tuberculosis. The presenting features in all three patients were similar; they presented with complaints of cough, abdominal swelling and marked weight loss. The abdomen is the sixth most common site of extra-pulmonary tuberculosis<sup>8</sup>, with the first being the lymph node (tuberculous lymphadenitis). The clinical presentation for abdominal tuberculosis is varied ranging from chronic abdominal pain, vomiting, fever, night sweats, and altered bowel habits to abdominal distension. From earlier studies in Nigeria, the main complaints consisted of abdominal pain, fever,

weight loss and ascites.<sup>9,10</sup> The classic doughy abdomen associated with the fibro-adhesive form is rarely seen.

The pathophysiology of ascites in these cases may be similar to cases of ascites in other non-malignant conditions<sup>8</sup>. Ascites is an abnormal accumulation of free fluid within the peritoneal cavity and generally due to either increased portal venous pressure, low plasma proteins (hypoproteinaemia), chronic peritoneal inflammation, leakage of lymphatic fluid into the peritoneal cavity or fluid overload.<sup>8</sup> Chronic inflammatory process (as in abdominal tuberculosis) results in significant increases in flow within peritoneal blood and lymphatic vessels. The high protein concentration of this fluid further decreases fluid reabsorption<sup>8</sup>. The ascitic fluid is usually an exudate with a protein content which is higher than 3.5 g/dl.

The diagnostic criteria for abdominal tuberculosis include histological evidence of caseating granulomas or acid-fast bacteria in the lesion or ascitic fluid, growth of *Mycobacterial tuberculosis* from tissue or ascitic fluid, good therapeutic response to chemotherapy with evidence of tuberculosis elsewhere and response to chemotherapy without subsequent recurrence in patients with clinical features of the disease<sup>6</sup>. However, the hallmark of diagnosis in most patients with abdominal TB is the finding of caseating granuloma and/ or AFB on histology or culture of the intestinal lesion and in addition an equivocal response to anti-tuberculosis treatment. Nevertheless, the suspected biopsy materials were not cultured for *Mycobacteria tuberculosis* as the facilities for such is not available in this centre. Ziehl Nielsen staining for *Mycobacterium tuberculosis* in ascitic fluid may be positive in 20-30% of cases<sup>8,10</sup>; this test was positive in all three patients. Constrictive pericarditis of tuberculous origin was excluded by appropriate investigative measures in all the patients. It was also clear that none of the patients had chronic liver disease.

The investigations are often to detect the cause of the fluid accumulation and subsequent management include a full blood count, erythrocyte sedimentation rate (ESR), Mantoux test, chest radiograph with abdominal – pelvic ultrasonographic scans<sup>11</sup>. The erythrocyte sedimentation rate (ESR) was raised in all three patients, but can be normal in histologically proven abdominal tuberculosis<sup>12, 13</sup>.

All three patients had positive results to the Mantoux test. The Mantoux test is a non-specific investigation with a high sensitivity but with low specificity. This test is however of a small diagnostic value in patients being screened for abdominal tuberculosis as BCG (*Bacille Calmette Guerin*) is given at birth to many children in Nigeria.

The chest radiograph should assist to find evidence of fibrocaceous lesions and cavitations. In two of the three patients, chest radiographs showed evidence of pulmonary tuberculosis. With the abdomino-pelvic ultrasonographic, features looked for, should include

intra-abdominal fluid (free or loculated), lymphadenopathy and calcification of lymph nodes within the abdomen; this investigation was useful in this study. Combined abdomino-pelvic ultrasonographic scan and computed tomography were found to be the most important imaging tool for diagnosis<sup>14</sup>.

Other recommended investigations would include barium studies (small bowel barium meal and barium enema) and peritoneal biopsy. In many centres in the developed world, peritoneal biopsy either by way of laparotomy or laparoscopy is the first line investigation in patients with suspected abdominal tuberculosis. Some earlier work from the West Cape of South Africa has highlighted some challenges with management of abdominal tuberculosis and concluded that laparotomy remained the definitive investigation in many of such patients and suggested therapeutic trial with anti-tuberculosis therapy in such patients with suspected abdominal tuberculosis<sup>14</sup>.

### Conclusion

Three cases of abdominal tuberculosis associated with massive ascites were reported. There is need to consider TB in the differential diagnosis of massive ascites, particularly in high TB-burden areas.

Patients who have clinical features that consist of nonspecific abdominal symptoms, ascites inclusive, should be investigated for abdominal tuberculosis. Early diagnosis is important as abdominal tuberculosis is known to respond to anti-tuberculosis chemotherapy and laparotomy can be avoided.

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