



## **Abdominal Tuberculosis – A Resemblance to Peritoneal Carcinomatosis**

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### **Author's contribution**

*The sole author designed, analyzed, interpreted and prepared the manuscript.*

### **Article Information**

DOI: 10.9734/JAMMR/2021/v33i1831058

#### Editor(s):

(1) Dr. Ashish Anand, G. V. Montgomery Veteran Affairs Medical Center, University of Mississippi Medical Center, William Carey School of Osteopathic Medicine, USA.

#### Reviewers:

(1) Randy McCool, Northwest Community Hospital, USA.

(2) Ugo Cioffi, University of Milan, Italy.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/73322>

**Case Study**

**Received 12 June 2021**  
**Accepted 21 August 2021**  
**Published 23 August 2021**

### **ABSTRACT**

**Introduction:** Tuberculosis remains a global public health concern. Abdominal tuberculosis is an atypical presentation and since it is extrapulmonary it may delay the diagnosis and treatment of this condition. The case report describes a typical presentation of abdominal tuberculosis and highlights the difficulties which are encountered in the diagnosis of abdominal tuberculosis.

**Presentation of case:** A 56 year old gentleman admitted to hospital with a 1 week history of generalised abdominal pain associated with abdominal distention and vomiting. The chest-X-ray was unremarkable and the abdominal X-ray revealed air-fluid levels. Laboratory investigations revealed a high white cell count at 14,000 $\mu$ l. At laparotomy, multiple small whitish deposits in the greater omentum and on the bowel with a frozen abdomen was found. Biopsy of these whitish deposits showed histology of giant Langhans multinucleated cells with acid-fast bacilli and necrosis and a granulomatous inflammatory process. Anti-tuberculosis treatment was initiated using a combination of antibiotics and he made an uneventful recovery.

**Discussion:** The clinical abdominal TB presentations include acute, subacute or chronic disease. The chest-X-ray of our patient showed no evidence of pulmonary tuberculosis however this is not surprising as less than half of patients with abdominal TB have pulmonary tuberculosis. Ultrasound findings in abdominal TB include thickening of the wall of the ileum, caecum and colon and associated ascites. When malignancy cannot be ruled out with certainty then laparotomy is

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recommended with biopsy of any peritoneal lesions, omental lesions and a lymph node biopsy.  
**Conclusions:** Judicious use of diagnostic procedures and a high index of suspicion may help in the timely diagnosis and treatment of abdominal tuberculosis. Biopsy of peritoneal/omental lesions and of a mesenteric lymph node is advisable to distinguish abdominal tuberculosis from peritoneal carcinomatosis.

*Keywords: Abdominal tuberculosis; extrapulmonary tuberculosis; peritoneal lesions; omental lesions; biopsy.*

## 1. INTRODUCTION

Tuberculosis remains a global public health concern accounting for 1.5 million deaths and 9.6 million cases worldwide reported despite better effective treatment and availability of better diagnostic tools [1]. The prevalence of tuberculosis is increasing in the developing world due to factors such as ageing populations, socio-economic deprivation, alcoholism, acquired immunodeficiency syndrome (AIDS) and transglobal immigration [2].

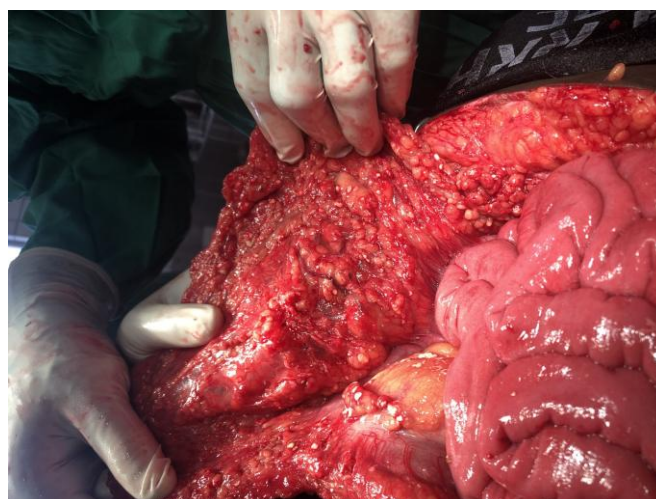
Extra-pulmonary tuberculosis involves the abdomen in 11% of patients [3,4]. In various parts of Sub Saharan Africa, abdominal tuberculosis continues to be reported particularly from Sudan [5], Nigeria [6], Kenya [7] and Ethiopia [8]. Abdominal TB can prove to be a diagnostic challenge as it may present with non-specific vague symptoms mimicking other common intra-abdominal pathological conditions [9,10].

A few case reports in the literature have shown that abdominal TB may cause bowel obstruction due to adhesions and multiple bowel strictures [11,12]. The ascites of tuberculous peritonitis is

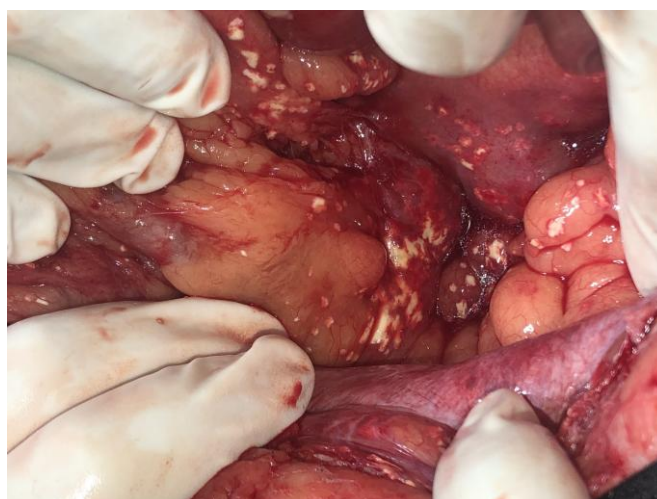
an exudate and therefore is commonly misdiagnosed as carcinomatous peritonitis. Microbiological diagnostic tests are usually inadequate and slow and the symptoms of abdominal TB are highly variable and non-specific. The ascitic fluid levels of lactate dehydrogenase (LDH), total protein, cancer antigen (CA-125) and serum/ascites glucose ratio are insufficient to distinguish peritoneal carcinomatosis from tuberculous peritonitis.

Furthermore, ultrasound and CT findings are non-specific and therefore it remains a difficult disease to diagnose. The ideal method for early diagnosis in patients with suspected tuberculous peritonitis is by laparoscopy and peritoneal biopsy [13-15]. The diagnosis of abdominal tuberculosis is often delayed due to lack of specific laboratory findings and lack of specific symptoms. This delay in diagnosis results in a delay in administering effective treatment resulting in some cases experiencing morbidity and mortality [16,17].

The case report describes a typical presentation of abdominal tuberculosis and highlights the difficulties which are encountered in the diagnosis of abdominal tuberculosis.



**Fig. 1. Omental whitish caseating lesions at laparotomy**



**Fig. 2. Caseating whitish lesions on the bowel wall and peritoneal surfaces at laparotomy**

## 2. CASE REPORT

A 56 year old gentleman was admitted complaining of a 1 week history of generalised colicky abdominal pain associated with vomiting and abdominal distention. There was no relevant past medical history and no history of HIV infection and no history of liver disease or alcoholism. On examination he was pale, cachectic and the abdomen had no previous scars and was distended with a tympanitic sound on percussion. On auscultation high pitched bowel sounds were present. Generalised tenderness mainly in the lower right side of the abdomen was present. Laboratory investigations revealed a high white cell count at 14,000  $\mu\text{L}$  and a haemoglobin level of 12.5 g/dl. Small bowel air fluid levels were seen however there was no evidence of pneumoperitoneum on plain abdominal X-ray and the chest X-ray was unremarkable.

The differential diagnosis included bowel obstruction secondary to internal herniation of small bowel. The patient presented with abdominal obstruction with a distended abdomen and for this reason a diagnostic laparoscopy was not carried out. At laparotomy, multiple small white deposits in the greater omentum and on the bowel with a frozen abdomen was found (Figs. 1,2). A mass in the right iliac fossa was also found and there was no evidence of any ischaemic/gangrenous bowel loops. At laparotomy, the whitish deposits on the peritoneal surfaces and omentum (Figs. 1,2) and a lymph node from the ileocaecal mass were biopsied. The clinical and radiological findings did not suggest abdominal tuberculosis in the first place.

Post-operatively the patient was kept nil orally on nasogastric decompression, intravenous fluids with Ringer's lactate and total parenteral nutrition was initiated. The histological diagnosis of the whitish deposits showed giant Langhans multinucleated cells with acid-fast bacilli and necrosis with a granulomatous inflammatory process. Anti-Tuberculosis treatment was initiated using a combination of antibiotics which included rifampicin, ethambutol, isoniazid and pyrazinamide with vitamin B6.

Following 14 days of treatment the patient was able to eat and was discharged on day 15 to the TB follow up clinic. The patient is currently gaining weight and is still on anti-tuberculosis treatment 4 months post-operatively.

## 3. DISCUSSION

Our patient was admitted to the Department of Surgery through the Emergency Department with radiological findings and clinical features suggestive of bowel obstruction. Initially the diagnosis of internal hernia of small bowel was suspected.

At laparotomy multiple small plaques in the omentum and bowel loops were found which is commonly seen in carcinomatosis. The most common form of extrathoracic tuberculosis is abdominal TB [18-20]. Involvement of the peritoneum, solid organs i.e. spleen, pancreas and liver, lymph nodes and gastrointestinal tract (GIT) denotes abdominal tuberculosis. Abdominal tuberculosis affects the gastrointestinal tract in 65-78% of patients [21]. The terminal ileum and ileocaecal junction are

the commonest sites of involvement followed by the colon and jejunum. In rare circumstances tuberculosis involves the oesophagus, stomach and duodenum.

The three types of intestinal lesions seen with intestinal TB include hypertrophic, ulcerative and stricture lesions. Nodal and peritoneal involvement may be present and peritoneal involvement may present with ascites or adhesions. The clinical features, endoscopic findings, radiological findings and histology may resemble chronic inflammatory bowel disease. In up to 40% of cases, the initial presentation of bowel tuberculosis is chronic diarrhoea followed by abdominal pain and weight loss [22].

The colonoscopy features of colonic tuberculosis includes erythema, ulcers, strictures, mucosal nodules and also deformation of the ileocaecal valve [23]. The histological features normally result in a definitive diagnosis with caseation strongly suggesting tuberculosis whilst in Crohn's disease acute necrosis of granuloma may occasionally be seen.

The clinical abdominal TB presentations include acute, subacute or chronic disease. This condition may manifest with bowel strictures, adhesions, perforation of bowel, ascites or with peritonitis. In 20-40% of patients that present with acute abdomen emergency laparotomy may be necessary [24-27]. Bowel obstruction secondary to strictures and adhesions may also be the presentation of abdominal tuberculosis [15], Pereira JM et al., 2005, 25-28). In less frequent circumstances the presentation will be that of an abdominal cocoon [28,29].

The chest-X-ray of our patient showed no evidence of pulmonary tuberculosis. This is not surprising as less than half of patients with abdominal TB have pulmonary tuberculosis. In a study by Marshal JB et al., the proportion of abdominal cases having associated pulmonary tuberculosis was 19% [30].

The ultrasound findings in abdominal TB may include thickening of the wall of the ileum, caecum and colon associated with ascites. Mesenteric thickness has been reported which is the result of lymphadenopathy, oedema due to lymphatic obstruction and fat deposition. CT findings in abdominal TB include lymphadenopathy, thickening of the bowel wall, irregular soft tissue densities in the omentum and ascites [31,32].

The diagnosis of GI tuberculosis may be facilitated with endoscopy. Since the granulomas in TB are submucosal, an endoscopic biopsy may not reveal granulomas. To increase the yield, multiple biopsies from the same site is advisable. The acid-fast bacilli (AFB) may be detected by polymerase chain reaction (PCR) of the endoscopic biopsy specimen. Pathological analysis of the omental and peritoneal deposits from the biopsy specimens was carried out to distinguish between tuberculosis and carcinomatosis. The mass in the right iliac fossa was a matted group of lymph nodes involved with TB. Biopsy of a lymph node in the ileocaecal area revealed evidence of caseating necrosis typically seen in TB. This group of matted lymph nodes resembled a caecal tumour which would have had a poorer prognosis and therefore a completely different treatment would have been carried out.

When malignancy cannot be ruled with certainty then laparotomy is recommended. Caseation and granulomas are more likely to be present in lymph nodes than bowel wall lesions and therefore a mesenteric lymph node biopsy should be taken at laparotomy. Bowel resection may be required in patients presenting with bowel obstruction due to hypertrophic lesions and strictures [7].

In countries which have a high prevalence of tuberculosis, peritoneal TB should always be considered as a differential diagnosis of bowel obstruction [33,34]. There are currently no universal guidelines regarding exclusive parenteral drug therapy in tuberculosis. Parenteral anti-TB treatment should be used in patients with altered intestinal absorption, severe forms with intestinal involvement, haemodynamic instability and post-operatively [12].

Multidrug resistance and a high risk of treatment failure may result from a lack of appropriate induction therapy [1,17]. Studies have shown that a combination of both oral and intravenous antibiotics or exclusive parenteral antibiotic therapy is effective in abdominal tuberculosis [12,35]. Many different intravenous antibiotics such as meropenem/imipenem, fluoroquinolones, linezolid, capreomycin have been used and are recommended by the World Health Organization (WHO) [12,17]. High concentrations of antibiotics and easy absorption is obtained in target-infected tissues when the antibiotics are given intravenously [11,35].

The mortality associated with treated abdominal tuberculosis is 15% despite being a treatable disease. However, untreated disease has a mortality rate of up to 60%. When abdominal TB presents with bowel perforation the mortality rate increased to 30%. Factors associated with an increased mortality include increased time between the onset of symptoms and perforation, multiple perforations, co-morbidities, concomitant use of corticosteroids, associated anaemia, malnutrition, hypoalbuminaemia, delayed surgery and acute post-operative surgical complications.

#### 4. CONCLUSIONS

Judicious use of diagnostic procedures and a high index of suspicion may help in the timely diagnosis and treatment of abdominal tuberculosis. Biopsy of peritoneal/omental lesions and of a mesenteric lymph node is advisable to distinguish abdominal tuberculosis from peritoneal carcinomatosis. Post-operatively until the oral route is available, treatment with parenteral alternative antibiotic regimens for tuberculosis is mandatory. Finally, in countries with a high incidence of tuberculosis, peritoneal tuberculosis should always be considered as a possible diagnosis of bowel obstruction.

#### CONSENT

The author declares that written and informed consent was obtained from the patient for publication of this case report.

#### ETHICAL APPROVAL

As per international standard or university standard, ethical approval has been collected and preserved by the author.

#### ACKNOWLEDGEMENT

The author wishes to thank clinical staff in the Department of Surgery of Masaka Regional Referral Hospital for their contribution in data collection and their contribution towards the clinical management of the patient. The author also wishes to extend his warm thanks to nursing staff, medical officers and anaesthetists who worked with him in the surgery theatres of Masaka Regional Referral Hospital.

#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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