



Non-Caseating Granulomatous Mycobacterium Tuberculosis Presenting as Colonic Lesions: A Case Report

Jennifer Mercado, Kevin Morton, David Siegel* and Karin Gunther

Department of General Surgery, Ascension Macomb Oakland Hospital, USA

Abstract

Background: A 81-year old male with anemia that was found on colonoscopy to have colonic lesions that cultured positive for *Mycobacterium tuberculosis* complex with non-caseating granulomas on biopsy.

Summary: Abdominal tuberculosis is a disease that poses a diagnostic challenge, as the nonspecific features of the disease may lead to diagnostic delays and development of complications. This condition has a vast range of symptomatology that mimics other abdominal pathology (e.g. Crohn's disease, colon cancer) commonly seen in the developing world. The caseation necrosis in granulomas is the histologic hallmark of TB. We describe an 81-year old male with anemia and constipation that was found on colonoscopy to have colonic lesions both in the medial wall of cecum and in the ascending colon. Colonoscopy findings further included: benign mucosa with hyperplastic glandular pattern, bleeding, edema and non-specific chronic inflammation. Biopsy report of these lesions showed non-caseating granulomas without evidence of malignancy. Patient developed ascites for which he underwent a diagnostic laparoscopy. A substantial amount of ascitic fluid was seen along with peritoneal carcinomatosis and some omental thickening. Peritoneum and omentum specimens on biopsy along with peritoneal washings continued to show non-caseating granulomas with negative acid-fast stain but positive *Mycobacterium tuberculosis* culture. This case highlights unusual presentations of abdominal tuberculosis with concomitant pathological findings of other commonly seen gastrointestinal disorders further delaying diagnosis and treatment.

Conclusion: Abdominal tuberculosis mortality rate has increased due to delay in diagnosis. We present a case of non-caseating granulomatous *Mycobacterium tuberculosis* presenting as colonic lesions that were initially highly suspicious for malignancy. This case highlights unusual presentations of abdominal tuberculosis with concomitant pathological findings of other commonly seen gastrointestinal disorders that further delaying diagnosis and treatment.

Keywords: Abdominal tuberculosis; Adenosine deaminase; Omental thickening; Carcinomatosis

Case Presentation

Abdominal tuberculosis is an increasingly common disease that poses diagnostic challenge, as the nonspecific features of the disease may lead to diagnostic delays and development of complications [1]. According to the World Health Organization, in 2017, the largest number of new TB cases occurred in the South-East Asia and Western Pacific Regions with 62% of new cases, followed by the African region, with 25% of new cases. WHO reports in 2017 estimated 10 million new TB cases and 1.3 million deaths from HIV negative people died from TB. The importance of establishing an early diagnosis of abdominal tuberculosis lies in the fact that the management of this disease is entirely different than other common gastrointestinal pathologies and that mortality rate has increased due to delay in the diagnosis. Recent case studies have evaluated the endoscopic features of TB of the colon [2,3]. As follow-up colonoscopy is not routinely performed after completion of anti-TB treatment, there is limited data on predicting the outcomes of TB lesions, namely, resolution of, lack thereof, scarring, or formation of strictures in the lumen after healing. The majority of the colon lesions resolve with anti-TB treatment, including strictures, thereby suggesting that strictures are more inflammatory rather than fibrotic in nature. Follow-up colonoscopy is not required in those who have symptomatic improvement after anti-TB treatment.

We describe an 81-year old male presenting with anemia and constipation. A colonoscopy was performed and was found to have colonic lesions both in the medial wall of cecum and in the ascending colon. Further examination of the mucosa showed a benign appearance with hyperplastic

OPEN ACCESS

*Correspondence:

David Siegel, Department of General Surgery, Ascension Macomb Oakland Hospital, 27351 Dequindre Rd. Madison Heights, MI, 48071, USA, Tel: (248) 546-2600;

E-mail: david.siegel@ascension.org

Received Date: 17 Sep 2019

Accepted Date: 21 Oct 2019

Published Date: 30 Oct 2019

Citation:

Mercado J, Morton K, Siegel D, Gunther K. Non-Caseating Granulomatous Mycobacterium Tuberculosis Presenting as Colonic Lesions: A Case Report. *Clin Surg*. 2019; 4: 2631.

Copyright © 2019 David Siegel. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



Figure 1: Colonic mucosa induration at 75 cm with blood seen throughout the colon.

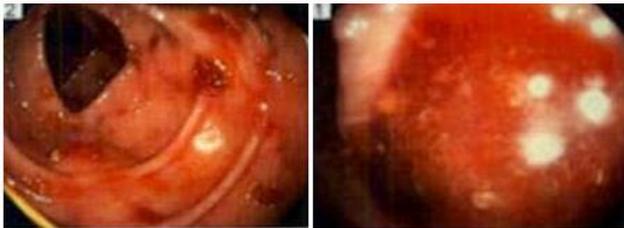


Figure 2: Descending and sigmoid colon demonstrating blood throughout the mucosa.

glandular pattern, bleeding (Figure 1 and 2), edema, and non-specific chronic inflammation. The patient has a past medical history of hypertension, hyperlipidemia, and basal cell carcinoma of the nose. Patient is known to live in the United States for over forty years. However, it is unknown if the patient had any recent close contact with anyone infected with TB, recent travel outside the country to an endemic area, any previous colonoscopies, previous PPD testing, Interferon gamma release assay, or BCG vaccine. Biopsy report of these lesions demonstrated non-caseating granulomas without evidence of malignancy. Patient denied any nausea or vomiting, abdominal pain, diarrhea, tenesmus, gross hematuria, dysuria, pneumaturia, fecaluria, weight loss, fever or chills, loss of appetite, fatigue, weakness, hematochezia or melena, changes in stool caliber or family history of gastrointestinal disorders or malignancy. Patient was admitted to the hospital the same day from the endoscopy unit secondary to colonoscopy findings, which were highly suspicious for malignancy, presenting as a possible partial colonic obstruction with iron deficiency anemia. Initial course of treatment included: clear liquid diet, hemoglobin monitoring, DVT prophylaxis, and antiemetic as needed. Patient was initially anemic (hemoglobin 10/hematocrit 31.9). CT of the abdomen and pelvis was performed to rule out metastases showed a new focal constrictive, but non-obstructive lesion in the sigmoid colon seen in Figure 3 (white arrow). The liver had a faintly cirrhotic appearance along with two faint blushes of enhancing lesions without evidence of ascites, infiltration into the omentum and mesentery. Lastly, CT was also remarkable for splenomegaly. An X-ray gastrograffin enema was ordered for better localization of the mass and showed reflux in the terminal ileum due to an abnormal morphology with mass like involvement in the medial wall of the cecum (Figure 4). The visualized portions of the terminal ileum were unremarkable. A second colonoscopy was performed in the operating room. The colonoscope was advanced to the transverse colon up to right side of the colon. The patient had an inflammatory stricture noted to be in the ascending colon and cecum. No other masses were seen. X-Ray of small bowel with serial films performed to rule out other possible lesions, was unremarkable (Figure 5). Patient developed ascites over a five-month period with abdominal distention

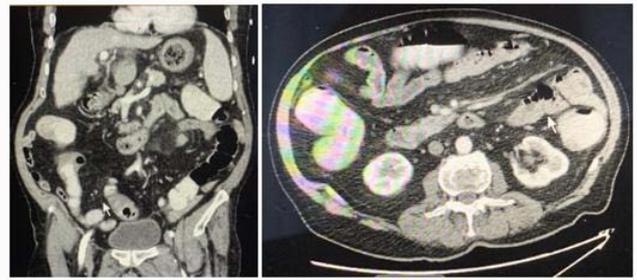


Figure 3: CT Abdomen and Pelvis showing a focal constriction but non-obstructive lesion in the sigmoid colon (white arrow).



Figure 4: Reflux in the terminal ileum due to mass in the medial wall of the cecum.



Figure 5: Unremarkable small bowel study.

and was sent by the oncology physician to the general surgery clinic for ascitic fluid drainage and peritoneal washings cytology and any other possible nodular biopsies. Due to presenting features highly concerning for possible malignancy, patient underwent a diagnostic laparoscopy with possible colectomy. Upon direct visualization of the abdominal cavity, ascitic fluid was noted and sent for microscopy, cytology, and culture. Significant peritoneal carcinomatosis and some omental thickening was noted. We decided to perform a partial omentectomy and peritoneal washing; however, no colectomy was performed. The only documented chest X-ray was performed months after the diagnosis of tuberculosis following a mechanical fall. Subsequently, it did not show any signs of tuberculosis. Sections of both the omentum and peritoneal biopsy reveal benign fibrofatty tissue with multiple coalescent non-necrotizing granulomatous inflammation. The granulomas are comprised of aggregates of epithelioid histiocytes and multinucleated giant cells along with lymphocytes and fibroblasts. No necrosis was noted. Anaerobic culture also showed no growth. Ascitic fluid cytological analysis showed 60 ml of cloudy yellow fluid, reactive mesothelial cells and chronic inflammation. Ascitic fluid acid fast bacilli smear was

negative but culture was positive for *Mycobacterium Tuberculosis* Complex. The latter is described as one of the four Paustian's criteria suggestive of *mycobacterium tuberculosis* diagnosis. Primary care team immediately began anti-tuberculosis quadruple antimicrobial therapy. Repeat chest X-ray was negative for evidence of tuberculosis. Patient reported resolution of his symptoms after completing four months of antimicrobial drug therapy.

Discussion

The importance of establishing early diagnosis lies in the fact that the management of the disease is entirely different than other pathologies. Many investigators have attempted to find specific differential diagnostic methods to distinguish these conditions and many clinical, endoscopic and radiological criteria have been recommended for the differentiation. Paustian's criteria suggest that the diagnosis be established if any one of the following four criteria are observed: histology showing tubercles with caseating necrosis, suggestive operative findings and consistent histology from mesenteric lymph nodes, culture showing growth of *Mycobacterium tuberculosis*, or histology showing acid-fast bacilli in the lesion. As studies have shown, the predominant areas in the colon affected by tuberculosis are the ileocecal valve, cecum and the ascending colon. Less commonly, in about 20% of cases, colonic mucosa has been described as hypertrophic with underlying histology of non-caseating TB in immunocompetent patients. However, no formal cohort studies have been implemented to verify the specificity of results. Pathophysiology of abdominal tuberculosis proposes that bacteria reaches the gastrointestinal tract via ingested direct spread from infected sputum from active lung lesions, hematogenous spread, direct or contiguous spread from infected organs and through infected lymph nodes. The most common presentation of abdominal tuberculosis is peritoneal tuberculosis and the leading cause of ascites in developing countries [4-7]. The ileocecal valve as the most common location in colonic tuberculosis due to relatively narrow lumen, stasis, low digestive activity and abundant lymph nodes. However, isolated colonic lesions have also been reported and define as other sites of the colon without the ileocecal region being involved. Multiple lesions are seen in one third of the patients with colonic involvement. Colonic TB manifestations are the typical "red flags" of colonic malignancy: abdominal pain (predominant symptom) and hematochezia (occurring less than one third with minor bleeding), fever, anorexia, change in bowel habits and fatigue. The patient's only chief complaints were constipation, and anemia; at initial time of presentation, anemia of unknown etiology. Peritoneal tuberculosis occurs in three forms: wet type with ascites, dry type with adhesions, and fibrotic type with omental thickening and loculated ascites. Based on these criteria, this patient likely had mixed typed: wet type with fibrotic type of peritoneal tuberculosis. Diagnosis of patients with presenting signs and symptoms of malignancy should include TB early in their differential diagnosis and perform appropriate diagnostic workup. All subjects must be subjected to colonoscopy evaluation, CT of abdomen and pelvis, chest X-ray, and interferon gamma release assay. When a patient develops ascites with concerning findings of carcinomatosis, diagnostic laparoscopy still remains the gold standard in aiding in diagnosis. Based on recent literature, the use of ascitic fluid adenosine deaminase (sensitivity 100% and specificity

96%) levels have proven to be effective in discriminating tuberculosis from other causes of ascites. Number, maturation, and stimulation of lymphocytes increase ADA activity in body fluids; thus, ADA activity is increased in body fluids in infections, in rheumatological diseases, and malignant lymphomas. Thus, immune cellular response against *Mycobacterium tuberculosis* intensifies the stimulation and the maturation of lymphocyte and increases ADA levels [7]. Interferon gamma release assay, sputum analysis, and chest X-ray will determine signs of tuberculosis infection. CT and colonoscopy can rule out possible etiology of the presenting symptoms.

Conclusion

The importance of establishing an early diagnosis of abdominal tuberculosis lies in the fact that the management and subsequent treatment of this disease is entirely different than other common gastrointestinal pathologies and that mortality rate has increased due to delay in diagnosis. For this reason, patients with presenting signs and symptoms of malignancy should include TB early in their differential diagnosis and perform appropriate diagnostic workup. Abdominal tuberculosis can present in various unspecific forms including non-caseating granulomas with a positive culture for *Mycobacterium Tuberculosis* and should undergo pharmacological therapy immediately with appropriate anti-tuberculosis medications after other causes have been excluded.

Lessons Learned

Patients presenting with signs and symptoms of malignancy that come from endemic countries should include tuberculosis early in their differential diagnosis and perform appropriate diagnostic workup. Abdominal tuberculosis can present in various unspecific forms including non-caseating granulomas with a positive culture for *Mycobacterium Tuberculosis*. Patients should undergo pharmacological therapy immediately with appropriate anti-tuberculosis medications after other etiologies have been excluded.

References

1. Debi U, Ravisnagar V, Prasad K, Sinha S, Sharma A. Abdominal tuberculosis of the gastrointestinal tract: Revisited World J Gastroenterol. 2014;20(40):14831-40.
2. Asuquo ME, Nwagbara VI, Akpan S, Ebughe G, Ugben T, Asuquo IM. Non-caseating submental tuberculous lymphadenopathy: A case report. CRCM. 2013;2:291-3.
3. Mukewar S, Mukewar S, Ravi R, Prasad A, Dua KS. Colon tuberculosis: endoscopic features and prospective endoscopic follow-up after anti-tuberculosis treatment. Clin Transl Gastroenterol. 2012;3(10):e24.
4. Navaneethan U, Cherian JV, Prabhu R, Venkataraman J. Distinguishing tuberculosis and Crohn's disease in developing countries: how certain can you be of the diagnosis? Saudi J Gastroenterol. 2009;15(2):142-4.
5. Global Tuberculosis Report. World Health Organization.
6. Harshal SM, Harjeet S, Vishal S. Recent advances in the diagnosis and management of abdominal tuberculosis. 2017.
7. Tahiri Joutei Hassani M, Hliwa W, Badre W. Adenosine Deaminase (ADA) in Peritoneal Tuberculosis. World Gastroenterology Organization. 2019.