

Case report of abdominal tuberculosis: a challenging diagnosis

Presentación de caso de tuberculosis abdominal: un desafío diagnóstico

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Summary

Tuberculosis is one of the top 10 causes of death worldwide and a leading cause of death from an infectious disease, above HIV/AIDS. It spreads mainly when a person with active tuberculosis disease expels airborne microparticles by coughs containing tuberculosis bacteria. The typical manifestation of its infection is pulmonary tuberculosis; however, it can also present as extrapulmonary tuberculosis, this last causing approximately 14% of total cases of the disease. Of tuberculosis-infected patients, although this is not a general rule, the immunocompromised patients and those with HIV are more susceptible to present extrapulmonary manifestations and disseminated disease, and even though lymphatic, miliary, and central nervous system involvement are the most prevalent, abdominal tuberculosis occurs as well with relative frequency. Abdominal tuberculosis is a diagnostic challenge given its clinical systemic and imaging manifestations, that can simulate proliferative abdominal malignant processes, inflammatory, infectious, and deposit diseases, which require histopathological studies for its confirmation and adequate treatment. The radiologist must be aware of the imaging manifestations of this pathology and keep it in mind in their differential diagnoses in cases of abdominal pathology with no clear known cause.

Resumen

La tuberculosis se ubica entre las diez principales causas de muerte en el mundo y como la principal causa de muerte por agentes infecciosos por encima del VIH/sida. Se propaga principalmente cuando una persona enferma de tuberculosis expulsa bacterias en micropartículas aéreas al toser. La manifestación típica de su infección es la tuberculosis pulmonar; sin embargo, también se puede presentar como tuberculosis extrapulmonar, causando esta última aproximadamente 14 % de los casos de la enfermedad. De los pacientes infectados de tuberculosis, aunque no es una regla general, los inmunocomprometidos y con VIH son más susceptibles de presentar manifestaciones extrapulmonares y enfermedad diseminada, y aunque el compromiso linfático, miliar y del sistema nervioso central son los prevalentes, la tuberculosis abdominal se presenta también con relativa frecuencia. La tuberculosis abdominal es un reto diagnóstico dadas sus manifestaciones clínicas sistémicas y de imagen, que pueden simular procesos proliferativos malignos abdominales, inflamatorios, infecciosos y de enfermedades por depósito, que requieren estudios histopatológicos para su confirmación y adecuado tratamiento. El radiólogo debe conocer las manifestaciones imagenológicas de esta patología y tenerlas presentes en sus diagnósticos diferenciales en los casos de patología abdominal sin causa clara conocida.

Introduction

Tuberculosis ranks among the top ten causes of death in the world and as the leading cause of death from infectious agents above HIV/AIDS. According to 2019 data, globally 10 million people became ill with TB de novo; there were 1.2 million deaths in HIV-negative people and 208,000 deaths in HIV-positive people. Men older than 15 years accounted for 56% of those who developed the disease, women 32%, and children 12% (1).

Tuberculosis, caused by the bacillus Mycobacterium tuberculosis, typically manifests as pulmonary tuberculosis; however, extrapulmonary tuberculosis may account for up to 14% of cases of the disease. Immunocompromised and HIV-positive patients are more susceptible to extrapulmonary manifestations and disseminated disease, and lymphatic, miliary, abdominal and central nervous system involvement prevails (2). Up to 15% of patients with abdominal tuberculosis have isolated infection, without pulmonary involvement, and due to clinical and imaging characteristics, they can simulate proliferative, inflammatory or deposit disease processes, making their diagnosis a challenge that requires histopathological studies for confirmation and treatment (2).

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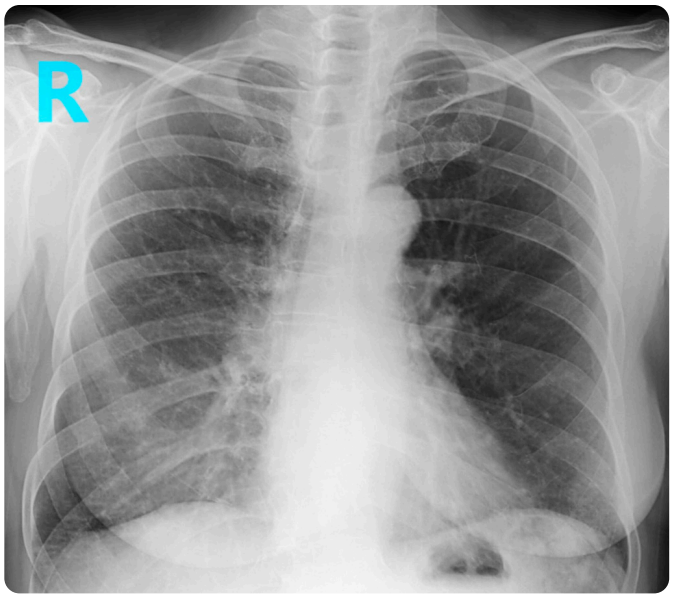


Figure 1. Chest X-ray. Mediastinum without widening, prominent aortic button, lung parenchyma without pathologic patterns, nodules or cavities. No evidence of hilar adenopathies or pleural effusion.

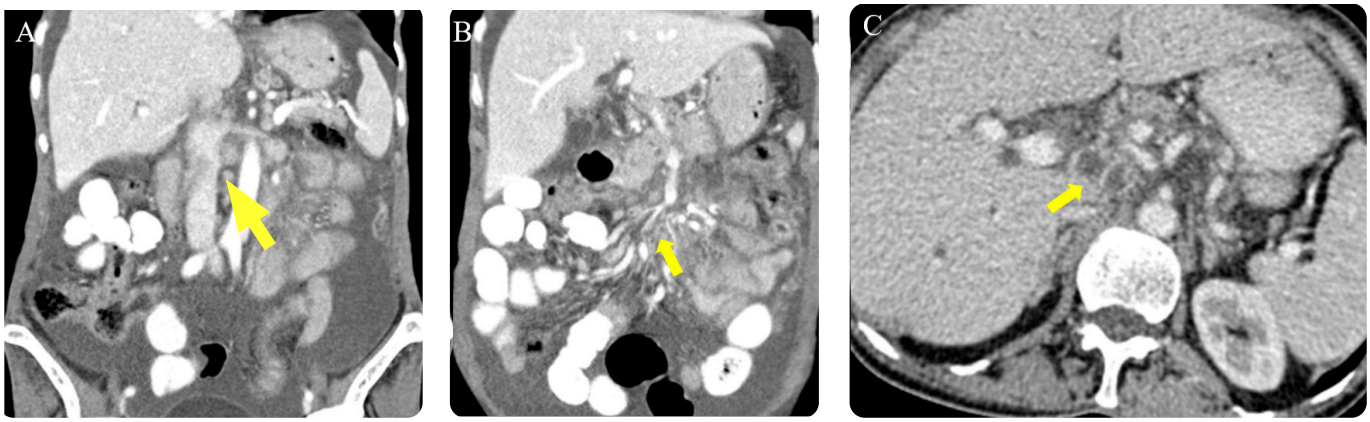


Figure 2. Abdominal CT, a and b) coronal reconstructions and c) axial acquisition, with oral and intravenous contrast medium. Multiple prominent para-aortic, intercavo-aortic and peripancreatic lymph nodes, with heterogeneous and peripheral enhancement with hypoattenuating center, findings suggestive of caseous necrosis.

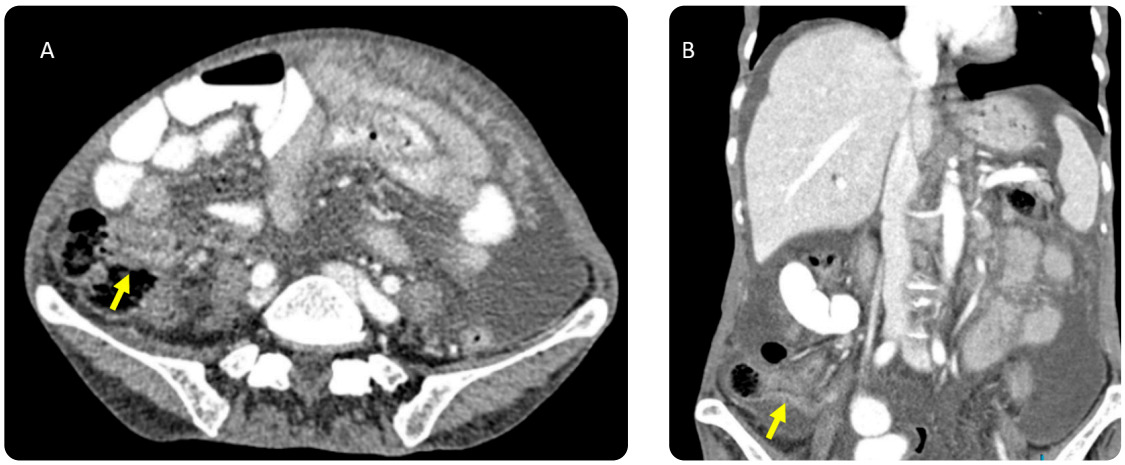


Figure 3. CT with double contrast medium. a) Axial view and b) coronal reconstruction. There is concentric mural thickening of up to 10 mm in the wall of the terminal ileum, with enhancement with contrast medium without intestinal occlusion.

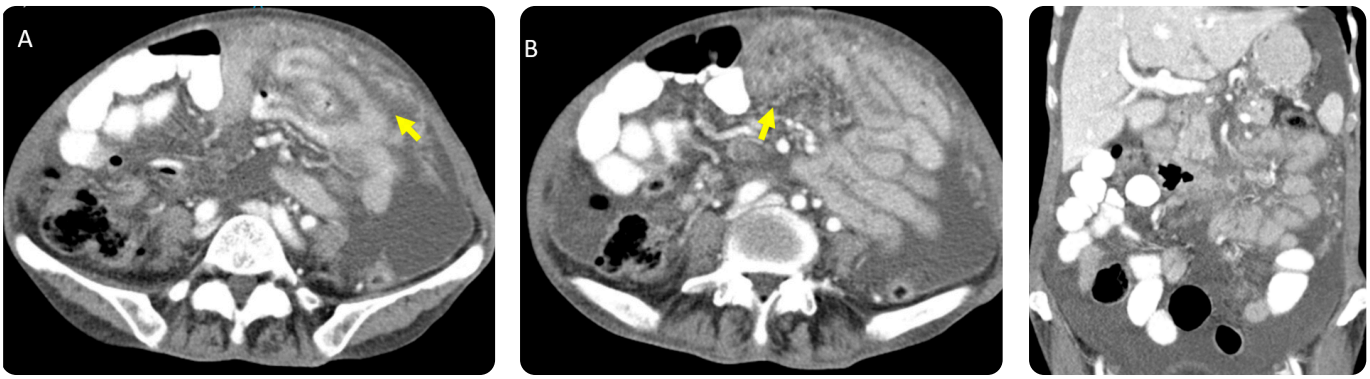


Figure 4. CT with double contrast medium. a and b) axial sections. c) Coronal reconstruction. Images of mixed peritoneal tuberculosis: nodular thickening with enhancement of the mesentery and greater omentum (omental cake), mesenteric and retroperitoneal nodules with peripheral enhancement in relation to central nodular necrosis. Ascites (20UH).

Clinical case

64-year-old female patient, with no relevant history, housewife, from a rural area. She was admitted to the hospital with a clinical picture of one year of evolution of diffuse and occasional abdominal pain, of mild intensity, which worsened ten days before her admission, associated with the perception of increased abdominal diameter and loss of approximately ten kilos of weight in the last six months. The patient had not had fever, emesis, respiratory symptoms, or alterations in voiding or bowel habit. Vital signs on admission were normal and physical examination revealed pain on abdominal palpation and positive ascitic wave, with no palpable masses or peritoneal irritation. Laboratory studies and chest X-ray on admission showed no abnormalities (Figure 1). Abdominal and transvaginal ultrasounds were performed, showing ascites, peritoneal implants and uterine myomatosis as positive findings. Diagnostic paracentesis was performed with the following findings: lymphocytes +++, protein > 3 gr/dL, serum albumin gradient < 1.1 in relation to exudate. Cytology and Gram stain of ascitic fluid were negative for malignant cells and bacteria, and among all the studies performed, CA125 was elevated (value: 107.5, with normal range: 0-35 U/mL). CT of the abdomen and pelvis showed ascites, nodular thickening of the mesentery and greater omentum (omental cake) with contrast enhancement, mesenteric lymph nodes and retroperitoneal ganglion conglomerates with necrotic center and concentric mural thickening of the terminal ileum (Figures 2, 3 and 4).

With the clinical history and these findings, a primary tumor of origin to be established was suspected and a biopsy of the omentum was performed. The histopathology result reported: signs of chronic inflammation with naked and tuberculoid granulomas, without malignant cells; the Ziehl Neelsen stain was negative for mycobacteria and the Lowenstein-Jensen culture was positive. The patient received treatment for tuberculosis, according to established infectious disease protocols, with adequate clinical response.

Discussion

As the presented case shows, extrapulmonary tuberculosis with abdominal involvement and lymphatic, intestinal and peritoneal involvement is a pathology difficult to distinguish from proliferative processes. Many of the patients, as in this case, do not present pulmonary symptoms or manifestations, nor definitive alterations of the peritoneal fluid, which further complicates the scenario. In this patient Ca 125 was found to be markedly elevated, which according to the literature is elevated in pathologies with mesothelial involvement and can be up to ten times its normal value in cases of peritonitis due to tuberculosis (3). Lymphadenitis, one of the findings in this case, is one of the most frequent forms of abdominal tuberculosis and is found in 55% to 66% of affected patients (4). Imaging is characterized by the presence of multiple mesenteric and retroperitoneal lymph nodes grouped together, with a hypoattenuating center associated with peripheral ring relapse, which are characteristic but not pathognomonic findings of caseous necrosis (4). Also ganglionic conglomerates with homogeneous and heterogeneous enhancement can be observed in the contrast medium phases (figure 2). In intestinal tuberculosis, as described in the literature and as seen in this patient, the terminal ileum and ileocecal region are the most commonly affected intestinal portions (80-90% of patients) (5) given the fluid stasis, the greater amount of ileal lymphoid tissue and the increased absorption rate in these intestinal segments (6). The characteristic imaging findings are concentric wall thickening, usually with luminal narrowing of the cecum and terminal ileum (Figure 3). Peritoneal involvement by tuberculosis is found in one third of patients; three types of peritonitis have been described by imaging: wet, mixed fibrotic and dry, with overlapping imaging features. Wet peritonitis is the most frequent, representing 90% of the cases, it is characterized by loculated ascites or not, with high cellular and protein content in the fluid, characterized by its slight high attenuation (20-45 HU) (7); mixed peritonitis, observed in 60% of the cases - the presentation of the patient described here -, is characterized by nodular thickening or mesenteric mass type, omental (omental cake) and peritoneal with loculated ascites (figure 4). Dry peritonitis, less frequent -10% of cases-, is characterized by mesenteric nodular thickening and formation of fibrotic adhesions with carcinomatous appearance and lymphadenopathies.

The tomographic findings in tuberculous peritonitis are non-specific, with peritoneal neoplastic dissemination, non-tuberculous peritonitis and mesothelioma as the main differential diagnoses (6-8).

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References

1. Chakaya J, Khan M, Ntoumi F, Aklillu E, Fatima R, Mwaba P, et al. Global tuberculosis report 2020–Reflections on the Global TB burden, treatment and prevention efforts. Int J Infect Dis. 2021;113 Suppl 1(Suppl 1):S7-S12. doi: 10.1016/j.ijid.2021.02.107.
2. Rodríguez-Takeuchi SY, Renjifo ME, Medina FJ. Extrapulmonary tuberculosis: Pathophysiology and imaging findings. Radiographics. 2019;39(7):2023-37.
3. Choi CH, Kim C-J, Lee Y-Y, Kim JS, Song T, Park H-S, et al. Peritoneal tuberculosis: A retrospective review of 20 cases and comparison with primary peritoneal carcinoma. Int J Gynecol Cancer. 2010;20(5):798-803.
4. Leder RA, Low VH. Tuberculosis of the abdomen. Radiol Clin North Am. 1995;33(4):691-705.
5. Engin G, Acunas B, Acunas G, Tunaci M. Imaging of extrapulmonary tuberculosis 1: CME available in print version and on RSNA Link. Radiographics. 2000;20(2):471-88.
6. Levy AD, Shaw JC, Sobin LH. Secondary tumors and tumor like lesions of the peritoneal cavity: imaging features with pathologic correlation. Radiographics. 2009;29(2):347-73.
7. Burrill J, Williams CJ, Bain G, Conder G, Hine AL, Misra RR. Tuberculosis: a radiologic review. Radiographics. 2007;27(5):1255-73.
8. Rastogi R. Abdominal cocoon secondary to tuberculosis. Saudi J Gastroenterol. 2008;14(3):139-41.

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