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Peritoneal tuberculosis: a rare intra-abdominal manifestation mimicking malignancy

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A 37-year-old male patient from India with no history of chronic diseases was admitted to the Department of Gastroenterology and Hepatology at the University Hospital in Cracow due to suspected peritoneal metastases of an unknown primary origin. He presented with a 2-month history of ascites, weight loss, postprandial fullness, nausea, weakness, and upper abdominal pain, no respiratory symptoms. A pre-admission computed tomography (CT) scans revealed ascites, suspected peritoneal metastases, and pyloric wall thickening.

Upon admission, the patient was in a good general condition. Laboratory tests revealed a mildly elevated C-reactive protein and cholestatic enzymes, hypoalbuminemia, a positive QuantiFERON test, and negative tumor markers (CEA, Ca 19-9, AFP). Gastroscopy and colonoscopy detected no macroscopic abnormalities. CT scans of the chest, abdomen, and pelvis revealed reactive lymph node enlargement on the left side of the chest, moderate ascites

and numerous peritoneal nodules were identified along the anterior abdominal wall (Figure 1 A-D). Additionally, multiple moderately enlarged mesenteric lymph nodes were observed, the majority of which were considered likely reactive. The radiologic findings were inconclusive and may have indicated a neoplastic peritoneal process; however, an infectious etiology also remained a possibility.

Subsequently, bronchoscopy was performed, revealing no endobronchial abnormalities. Microorganisms representing physiologic respiratory tract flora were isolated from bronchoalveolar lavage, and cytology revealed inflammatory cells and debris. In the context of tuberculosis testing, direct smear microscopy was negative, while the molecular assay (genetic probe) was positive.

A diagnostic laparoscopy revealed inflammatory changes in both the parietal and visceral peritoneum. Microscopic peritoneal nodules were observed on both surfaces, along with a small amount of cloudy fluid in the subhepatic space and pelvis. Histopathology of peritoneal nodules showed granulomas composed of epithelioid histiocytes and occasional Langhans-type giant cells, with negative special stains (PAS, Ziehl-Neelsen) (Figure 1E-F). The findings initially suggested a granulomatous inflammatory process, primarily sarcoidosis. However, bacterioscopy and molecular tests for tuberculosis were negative, while BACTEC culture of peritoneal tissue sample was positive. Ultimately, extrapulmonary tuberculosis with abdominal involvement was diagnosed, and standard antituberculous therapy was initiated.

Peritoneal tuberculosis (PT) is a rare form of extrapulmonary tuberculosis caused by an infection with the *Mycobacterium tuberculosis complex,* accounting for an estimated 2% of all tuberculosis cases [1]. PT may spread via several routes, most commonly hematogenous or lymphatic dissemination from a primary pulmonary focus [2]. Less frequently, it occurs through direct spread from adjacent organs or via the digestive tract after ingestion of mycobacteria in

sputum or contaminated dairy products. The most prevalent symptoms encompass abdominal pain, ascites, weight loss and fever [2].

A comprehensive differential diagnosis is required to exclude neoplastic, infectious and autoimmune processes [3]. However, ascitic fluid typically has a low bacterial load, which limits the diagnostic yield of microbiological testing [1,4]. In most cases, histopathological examination combined with microbiological analysis is necessary. The standard treatment regimen for this condition typically lasts six months and consists of isoniazid, rifampicin, pyrazinamide, and ethambutol. The diagnosis of PT remains challenging due to its non-specific clinical presentation and often requires histopathological material for definitive confirmation.

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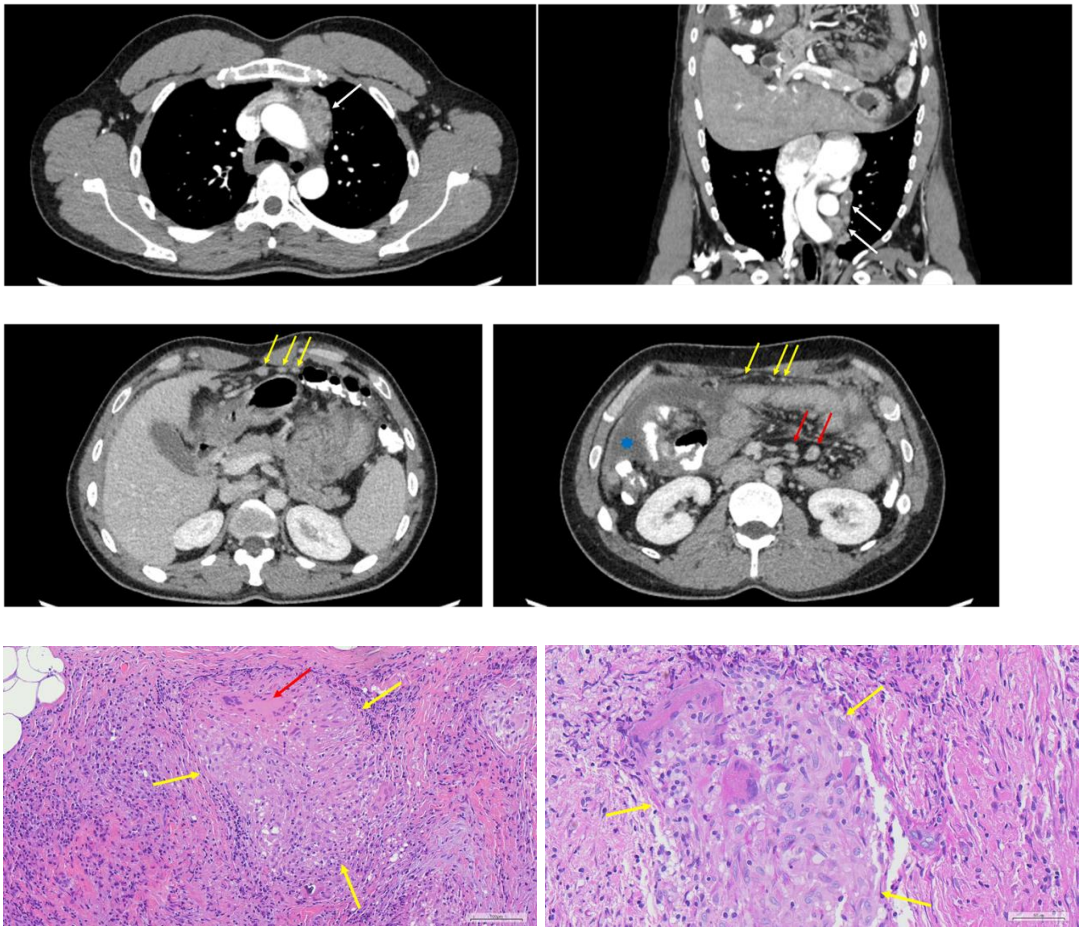

Figure 1 A–B – Contrast-enhanced computed tomography scans of the chest demonstrated enlarged mediastinal lymph nodes (white arrows): one adjacent to the aortic arch measuring 30 × 22 × 31 mm and another located inferiorly measuring 24 × 20 × 32 mm, with a small calcification; **C–D –** contrast-enhanced computed tomography scans of the abdomen and pelvis demonstrated moderate ascites (blue asterisk), numerous peritoneal nodules up to 7 mm adjacent to the anterior abdominal wall (yellow arrows), and multiple mildly enlarged mesenteric lymph nodes measuring up to 9 mm in short-axis diameter (red arrows); **E** – hematoxylin and eosin staining of peritoneum tissues demonstrating non-suppurative granulomatous inflammation composed of epithelioid histiocytes (yellow arrows) and occasional multinucleated Langhans giant cells (red arrows) and surrounding chronic inflammatory infiltrate; **F** – periodic acid - Schiff stain of the peritoneal biopsy showing granulomatous inflammation (yellow arrows) without identifiable pathogens

Short title: Peritoneal tuberculosis mimicking malignancy