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Giant Intra-Abdominal Solitary Fibrous Tumor Mimicking Gastric GIST: A Radiologic–Pathologic Correlation

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ABSTRACT

Solitary fibrous tumor (SFT) is a rare fibroblastic neoplasm that may arise within the abdominal cavity and mimic other mesenchymal tumors on imaging. We report a 47-year-old man presenting with abdominal pain and progressive distension. Contrast-enhanced CT revealed a giant heterogeneous and largely necrotic left intraperitoneal mass measuring 121 × 171 × 246 mm, with infiltration of the left hepatic lobe, intimate contact with the stomach, and significant mass effect causing left hydronephrosis. The imaging appearance initially suggested an exophytic gastric gastrointestinal stromal tumor (GIST). Ultrasound-guided biopsy demonstrated a spindle-cell neoplasm with diffuse CD34 and nuclear STAT6 expression, while DOG1 and CD117 were negative, supporting the diagnosis of a solitary fibrous tumor. This case highlights the important radiologic overlap between giant intra-abdominal SFT and gastric GIST and emphasizes the value of radiologic–pathologic correlation for accurate diagnosis.

KEYWORDS

Solitary fibrous tumor; STAT6; GIST; intra-abdominal mass; hypervascular tumor

MAIN ARTICLE

INTRODUCTION

Solitary fibrous tumor (SFT) is a rare fibroblastic neoplasm characterized by the recurrent NAB2::STAT6 fusion, with diffuse nuclear STAT6 expression representing a highly useful diagnostic marker [1,2]. Although initially described in the pleura, SFT may arise at virtually any anatomical site, including the abdominal cavity [3].

Intra-abdominal SFTs may present as large, heterogeneous and hypervascular masses, sometimes with necrotic or cystic changes, and their organ of origin can be difficult to determine when they reach a large size [3,4]. These imaging features may overlap with those of gastrointestinal stromal tumors (GISTs), creating a diagnostic challenge. We report a giant intra-abdominal SFT initially suspected to be a gastric GIST on CT, highlighting the importance of radiologic-pathologic correlation in reaching the correct diagnosis.

CASE PRESENTATION

A 47-year-old man with no significant medical history presented with abdominal pain and progressive abdominal distension. Clinical examination confirmed marked abdominal distension.

Contrast-enhanced abdominopelvic CT revealed a giant left intraperitoneal mass measuring 121 × 171 × 246 mm. The lesion was heterogeneous and largely necrotic, with infiltration of the left hepatic lobe and intimate contact with the stomach (Figure 1). It caused significant mass effect, including grade II left hydronephrosis secondary to compression of the left lumbar ureter (Figure 2). No suspicious lymphadenopathy or secondary lesion was identified within the explored field. The imaging appearance initially favored an exophytic gastric GIST.

Ultrasound-guided core biopsy showed a spindle-to-ovoid mesenchymal proliferation with alternating cellular and collagenized areas and prominent hemangiopericytoma-like branching vessels. Mitotic activity was low, with approximately 1 mitosis per 10 high-power fields, and tumor necrosis involved about 10% of the sampled tissue.

Immunohistochemistry demonstrated diffuse strong CD34 expression and intense diffuse nuclear STAT6 positivity, while CD117, DOG1, smooth muscle actin, S100, ERG, and

pancytokeratin were negative. These findings supported the diagnosis of a partially necrotic solitary fibrous tumor, provisionally classified as intermediate risk according to the Demicco model.

DISCUSSION

On CT, abdominal and pelvic solitary fibrous tumors (SFTs) typically present as large, well-defined and hypervascular soft-tissue masses, with moderate-to-marked contrast enhancement [3,4]. Larger lesions are frequently heterogeneous because of necrosis, cystic degeneration, or hemorrhage, reflecting their variable stromal and vascular composition [4]. Prominent intratumoral vessels and collateral feeding vessels are also common and may provide a useful, although not specific, clue to the diagnosis of SFT [3]. Abdominopelvic SFTs may reach considerable size and frequently displace adjacent organs, which can make their exact site of origin difficult to determine on cross-sectional imaging [4]. In our case, the giant heterogeneous and largely necrotic mass, with intimate relationships with the stomach and left hepatic lobe, closely reproduced these imaging characteristics and contributed to the initial diagnostic uncertainty.

Radiologic distinction between an intra-abdominal SFT and a gastric GIST may be difficult because both tumors can present as large, heterogeneous masses with necrotic or cystic areas and heterogeneous contrast enhancement [3,4,5].Gastric GISTs, particularly larger lesions, may show exophytic growth, lobulated or irregular contours, heterogeneous enhancement, and internal necrosis, features that considerably overlap with the appearance of SFT [5]. Conversely, SFTs may demonstrate prominent intratumoral vessels and strong enhancement, while very large tumors may obscure their true organ of origin because of extensive displacement and compression of adjacent structures [3,4]. In our case, the intimate gastric contact and suspected endoluminal component initially favored a gastric GIST, although the exact site of origin remained uncertain. Similar diagnostic confusion between SFT and GIST has been reported in the literature, confirming that this overlap represents a genuine imaging pitfall [6].

Because SFT may overlap radiologically with other mesenchymal tumors, including GIST, histopathologic confirmation is essential [4,6]. SFT typically shows spindle cells within a collagenized stroma and branching “staghorn” vessels [2]. Diffuse nuclear STAT6 expression, related to the characteristic NAB2::STAT6 fusion, is a highly useful diagnostic marker,

whereas CD34 is less specific [1,2]. In our case, diffuse nuclear STAT6 and CD34 positivity, together with negative DOG1 and CD117, strongly supported the diagnosis of SFT over the initial diagnosis of gastric GIST.

Cross-sectional imaging plays an important role in local staging and surgical planning, particularly in large SFTs, by defining tumor extent, vascularity, and relationships with adjacent organs [3,4]. For localized and resectable SFT, complete surgical excision remains the main treatment, with resection margins significantly associated with disease-free survival [7]. Risk assessment should consider age, tumor size, mitotic activity, and necrosis according to the Demicco model [8]. Importantly, SFTs may recur late; in a large international series, the recurrence-free interval decreased from 72% at 5 years to 52% at 10 years, highlighting the importance of long-term follow-up [9].

CONCLUSION

Giant intra-abdominal SFTs may closely mimic gastric GISTs on CT because of their large size, heterogeneous enhancement, necrosis and close relationship with gastrointestinal structures. Recognition of prominent vascularity and careful assessment of the tumor's site of origin may raise suspicion for SFT, although imaging findings remain nonspecific. In such cases, radiologic-pathologic correlation and nuclear STAT6 immunohistochemistry are essential for definitive diagnosis.

FIGURES

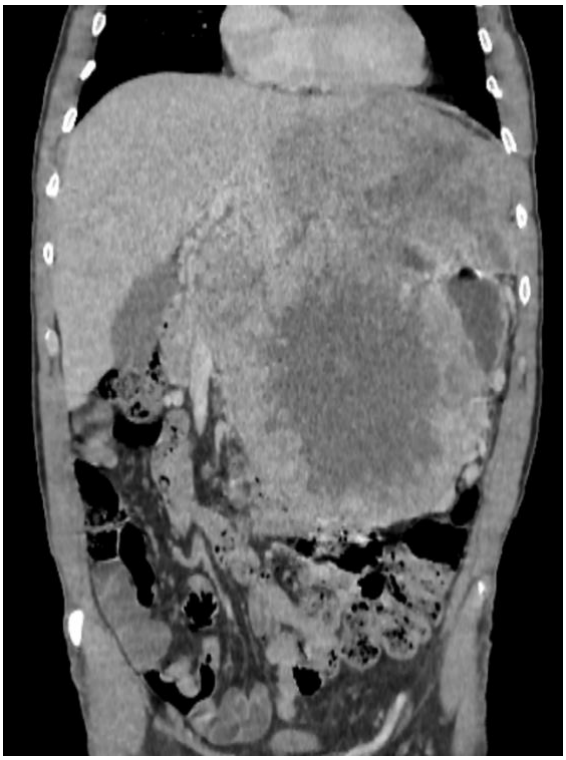

Figure 1. *Contrast-enhanced coronal CT image showing a giant heterogeneous left intraperitoneal mass with extensive central necrosis and enhancing peripheral solid components. The lesion closely involves the left hepatic lobe and is in intimate contact with the stomach.*

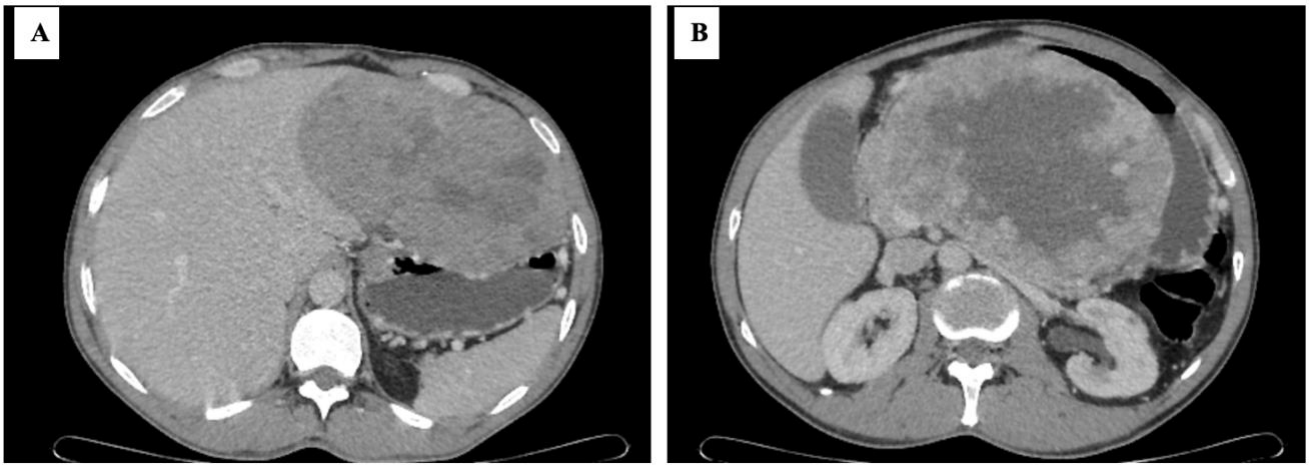

Figure 2. ***(A)*** *Axial contrast-enhanced CT findings image showing enhancing tumor tissue with intratumoral necrosis and close relationships with adjacent abdominal structures.* ***(B)*** *CT image demonstrating left hydronephrosis secondary to compression of the left lumbar ureter by the tumor.*

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