Annals of Clinical Case Reports

Case Report
Published: 26 Nov, 2024

A Case Report on Primary Inflammatory Myofibroblastic Tumor of the Stomach in an Adult Female: A Comprehensive Analysis

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Abstract

Inflammatory Myofibroblastic Tumor (IMT) is a rare mesenchymal neoplasm characterized primarily by myofibroblastic proliferation and a prominent inflammatory infiltrate, including plasma cells and lymphocytes. Although IMTs predominantly affect adolescents and can arise in various body sites, they are exceedingly rare in adults, particularly within the stomach. This report presents a case involving an adult patient who underwent surgical resection for a suspected malignant gastric tumor, which was subsequently diagnosed as an IMT on histopathological examination.

Keywords: Inflammatory myofibroblastic tumor; Gastric; Surgical resection

Introduction

Inflammatory Myofibroblastic Tumors (IMTs) are typically observed in the lungs of children and young adults but are exceedingly uncommon as gastric tumors in the adult population [1] Characterized by myofibroblast proliferation and variable inflammatory cell infiltration, IMTs exhibit ambiguous histological features, leading to a diverse nomenclature that reflects uncertainty regarding their biological behavior [2,3]. IMTs are generally rare in adults, gastric IMTs are particularly scarce [4,5]. Based on the current World Health Organization (WHO) classification of soft tissue tumors, IMTs are considered intermediate tumors with a morphological spectrum between benign and malignant characteristics [3]. Recent evidence suggests that IMTs may exhibit malignant potential, including risks of local recurrence, metastasis, and dissemination, potentially due to anaplastic lymphoma kinase gene rearrangements. IMTs frequently recur and rarely metastasize [6,7]. The pathogenesis of IMTs remains unclear, although various allergic, immunologic, and infectious mechanisms have been postulated [8]. The nonspecific radiological features on Computed Tomography (CT) scans often complicate preoperative diagnosis, as they overlap with other gastric neoplasms. We present a case of a primary gastric IMT in an adult female, incidentally identified during a CT scan for pulmonary nodules. The lesion's growth and the patient's prior lung cancer diagnosis raised suspicions of malignancy, prompting surgical intervention. The final pathology confirmed the diagnosis of IMT. Given the rarity of this condition, we discuss the imaging findings and the challenges faced in preoperative diagnosis.

Case Presentation

A 62-year-old female patient was admitted to our hospital in June 2023 for evaluation of a progressively growing pulmonary nodule incidentally discovered during a physical examination four years prior. Subsequent chest CT imaging confirmed nodule enlargement and identified thickening of the greater curvature of the stomach. The patient subsequently underwent a pulmonary lobectomy. Three months later, gastroscopy revealed a 2.0 cm × 3.0 cm lesion on the anterior wall of the stomach, characterized by mucosal eminence, surface erosion, and central depression. During the procedure, the mucous membrane was incised, revealing a white, firm tumor. However, due to the limited biopsy site, tumor tissue could not be obtained. Instead, lymphocyte infiltration and focal lymphoid follicle formation within the muscularis mucosa were observed. The patient was readmitted to our hospital for further treatment. The patient had no history of smoking, alcohol consumption, hypertension, diabetes, or coronary heart disease. Tumor markers were within the normal range. Her comorbidities included hypercholesterolemia and deep venous thrombosis of the lower extremity. On September 12, 2023, a subsequent contrast-enhanced CT scan of the chest

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Received Date: *13 Nov 2024*
Accepted Date: *21 Nov 2024*
Published Date: *26 Nov 2024*

Citation:
Wen-Wei Yu1, Qiong Li1, Xi-Sheng Liu, Han Ge. A Case Report on Primary Inflammatory Myofibroblastic Tumor of the Stomach in an Adult Female: A Comprehensive Analysis. Ann Clin Case Rep. 2024; 9: 2705.
ISSN: 2474-1655.

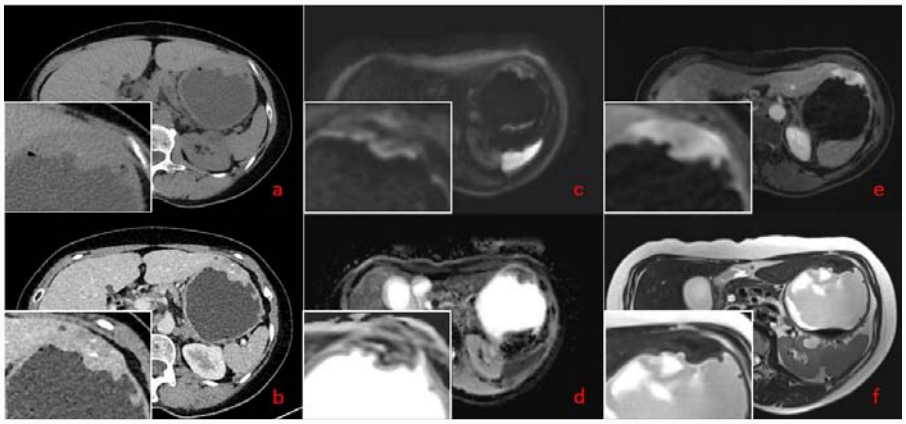

Figure 1: (a) The patient underwent a chest CT scan on May 19, 2023, which revealed local thickening of the greater curvature of the stomach. **(b)** A subsequent contrast-enhanced CT scan of the chest and upper abdomen on September 12, 2023 provided clearer visualization, the thickened tissue revealed a low density of necrotic areas and calcified components. On October 19, 2023, the day before the operation, the patient underwent a gastric MRI examination. The MRI findings demonstrated restricted diffusion on **(c)** Diffusion-Weighted Imaging (DWI) and the **(d)** Apparent Diffusion Coefficient (ADC) map. Additionally, the MRI showed significant enhancement on **(e)** Dynamic-Contrast Enhanced MRI (DCE-MRI), with slight hypersignal on **(f)** T2-Weighted Imaging (T2WI).

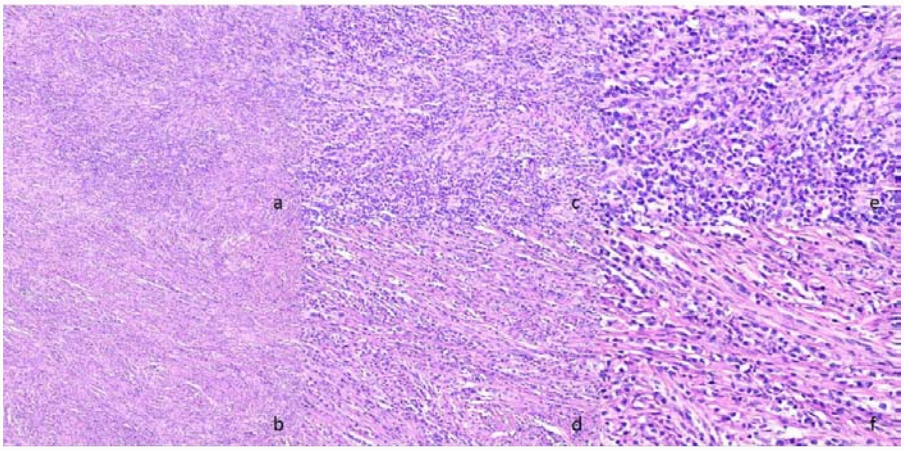

Figure 2: Findings on histology of gastric Inflammatory Myofibroblastic Tumor (IMT). The tumor cells are densely arrayed, presenting a fusiform shape with myofibroblast or fibroblast morphology. The nuclei are oval to fusiform, with visible small nucleoli. Lymphocytes and plasma cells are scattered in the stroma. (a-b) (H&E ×100) (c-d) (H&E ×200) (e-f) (H&E ×400).

and upper abdomen was performed. Heterogeneous enhancement of the mass was noted. Patchy ossification was observed within the lesion. The lesion had a well-circumscribed margin with clear surrounding fat space. The lesion showed signs prone to be benign, such as no evidence of liver metastases and lymphadenopathy, a well-circumscribed margin and ossification in the mass. A gastric Magnetic Resonance Imaging (MRI) examination was performed the day before the operation, revealing localized thickening of the anterior wall of the greater curvature of the stomach, measuring 3.8 cm × 1.7 cm. This finding raised concerns for malignant lesions such as lymphoma or adenocarcinoma, as evidenced by slight hyposignal on T2-Weighted Imaging (T2WI), with several lower signals inside, indicating that it may contain fiber composition. Diffusion-Weighted Imaging (DWI) and Apparent Diffusion Coefficient (ADC) mapping demonstrated slightly restricted diffusion, presenting as heterogeneous hyperintensity and hypointensity, respectively, which could be used to distinguish it from lymphoma. Dynamic-Contrast Enhanced MRI (DCE-MRI) showed significant enhancement. Diffusion-Weighted Imaging (DWI) and Apparent Diffusion Coefficient (ADC) mapping demonstrated restricted diffusion, presenting as heterogeneous hyperintensity and hypointensity, respectively. Dynamic-Contrast Enhanced MRI (DCE-MRI) showed significant enhancement. Figure 1 shows the comparative CT scan and MRI examinations.

On October 20, 2023, after satisfactory anesthesia and routine disinfection, an umbilical incision was made to establish pneumoperitoneum, followed by the insertion of a trocar and laparoscope. After thorough exploration of the entire enterocoelia, laparoscopic local gastric tumor resection was performed. During the operation, a red, pliable, and oblate mass measuring approximately 5.0 cm × 4.0 cm was identified on the anterior wall of the gastric body near the surface of the gastric fundus. Enlarged lymph nodes were observed on both sides of the lesser and greater curvature of the stomach, with no infiltration into adjacent organs. The greater curvature of the stomach was dissected along the appetizing colonic ligament, allowing for elevation of the gastric wall. Blood vessels supplying the gastric tumor were severed using an ultrasonic knife. The gastric wall was then incised at the edge of the tumor, and the tumor was carefully removed and placed in a specimen bag. The entire procedure lasted 102 minutes without any intraoperative complications. The postoperative course was uneventful (Figure 2). Histologic examination of the resected tumor revealed a 4.3 cm × 3.0

cm × 1.8 cm spindle cell tumor. Immunohistochemical examination confirmed the diagnosis of IMT, with positive staining for Smooth Muscle Actin (SMA), IgG, Kappa, and Lambda. CD34 showed weak positivity, while S100 was negative. The patient experienced a smooth recovery without postoperative pain three months after the operation.

Discussion

IMTs are rare lesions, considered to be morphologic expressions of reactive, reparative, infective and neoplastic processes [9]. They may be affected by infections, autoimmune or neoplastic in origin. They are often locally recurrent; however, they rarely metastasize. IMTs are histopathologically composed of myofibroblastic spindle cells with inflammatory cell infiltrate of plasma cells, lymphocytes and eosinophiles. They are mainly seen in children and young adults, and most commonly affect lungs, but they have been recognized that they can affect any anatomic localization or any age group of patients [6,10]. Primary gastric IMTs are exceedingly rare and can easily be mistaken for other gastric tumors due to similar radiological appearances. Primary IMTs of stomach are extremely rare diseases and usually confused with GISTs, unless correlated with immunohistochemistry study postoperatively [11]. In our case, the significant gastric wall thickening and the absence of tumor tissue retrieval via gastroscopy led to a differential diagnosis including lymphoma or adenocarcinoma. The etiology of IMTs remains controversial, with potential infectious, traumatic, or autoimmune origins. Despite diagnostic challenges, careful histopathological assessment is crucial when considering IMT in the differential diagnosis. Clinically, IMTs manifest variably depending on the affected site, with respiratory symptoms being common in pulmonary cases. However, when they affect the stomach, the clinical presentation depends on its anatomical positioning and size in the stomach. Treatment consensus for IMTs has not been established, but complete surgical resection followed by long-term monitoring is generally recommended [12]. Chemotherapy and radiotherapy are advocated for cases with recurrence or metastasis [2].

Conclusion

We report an unusual case of gastric IMT in an adult female, incidentally discovered during routine examinations. While the radiological features of IMT are not specific, histopathological and immunohistochemical analyses facilitate accurate diagnosis. A complete surgical resection remains the only proven mode of cure, and is proposed as the first line of treatment in all cases. The prognosis is favorable following complete surgical excision, underscoring the importance of comprehensive resection and diligent follow-up as the preferred management strategy.

References

1. Pecoraro Y, Diso D, Anile M. Primary inflammatory myofibroblastic tumor of the trachea. Respirol Case Rep. 2014;2(4):147-9.
2. Hajong R, Newme K, Khongwar D. Primary inflammatory myofibroblastic tumor of stomach-report of a very rare case. J Family Med Prim Care. 2021;10(1):552-3.
3. Masuda Y, Kanazawa Y, Goto O. Primary gastric inflammatory myofibroblastic tumor treated with non-exposed endoscopic wall-inversion surgery (NEWS): A case report and literature review. DEN Open. 2024;4(1):e243.
4. Al-Taie OH, Mörk H, Jenett M. Fast-growing gastric inflammatory pseudotumor: a rare manifestation of peptic ulcer disease. Endoscopy. 2002;34(3):239.
5. Leon CJ, Castillo J, Mebold J. Inflammatory myofibroblastic tumor of the stomach: an unusual complication after gastrectomy. Gastrointest Endosc. 2006;63(2):347-9.
6. Bjelovic M, Micev M, Spica B. Primary inflammatory myofibroblastic tumor of the stomach in an adult woman: a case report and review of the literature. World J Surg Oncol. 2013;11:35.
7. Coffin CM, Hornick JL, Fletcher CD. Inflammatory myofibroblastic tumor: comparison of clinicopathologic, histologic, and immunohistochemical features including ALK expression in atypical and aggressive cases. Am J Surg Pathol. 2007;1(4):509-20.
8. Horiuchi R, Uchida T, Kojima T. Inflammatory pseudotumor of the liver. Clinicopathologic study and review of the literature. Cancer. 1990;65(7):583-90.
9. Papachristou GI, Wu T, Marsh W. Inflammatory pseudotumor of the liver associated with Crohn's disease. J Clin Gastroenterol. 2004;38(9):818-22.
10. Katakwar A, Gedam BS, Mukewar S. Primary gastric inflammatory myofibroblastic tumor in an adult-case report with brief review. Indian J Surg Oncol. 2014;5(1):66-70.
11. Greenson JK. Gastrointestinal stromal tumors and other mesenchymal lesions of the gut. Mod Pathol. 2003;16(4):366-75.