

## Rare case of an abdominal mass: Reactive nodular fibrous pseudotumor of the stomach encroaching on multiple abdominal organs

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### Abstract

Reactive nodular fibrous pseudotumor (RNFP), which presents abdominal clinical manifestations and malignant radiographic results, usually requires radical resection as the treatment. However, RNFP has been recently described as an extremely rare benign post-inflammatory lesion of a reactive nature, which typically arises from the sub-serosal layer of the digestive tract or within the surrounding mesentery in association with local injury or inflammation. In addition, a postoperative diagnosis is necessary to differentiate it from the other reactive processes of the abdomen. Furthermore, RNFP shows a good prognosis without signs of recur-

rence or metastasis. A 16-year-old girl presented with a 3-mo history of epigastric discomfort, and auxiliary examinations suggested a malignant tumor originating from the stomach; postoperative pathology confirmed RNFP, and after a 2-year follow-up period, the patient did not display any signs of recurrence. This case highlights the importance of preoperative pathology for surgeons who may encounter similar cases.

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**Key words:** Reactive nodular fibrous pseudotumor; Post-inflammatory lesion; Digestive tract; Mesentery; Good prognosis

**Core tip:** Our case report describes a rare benign tumor originating from the gastrointestinal tract. To date, this lesion has been reported in 20 cases worldwide. The most significant and important insights are that these diseases possess fairly good prognosis with opposite radiographic and clinical findings. Pathologically, reactive nodular fibrous pseudotumor (RNFP) was recently described arising from the sub-serosal layer or within the surrounding mesentery. However, the veracity of the pathological examination results and the etiology are still controversial. We will describe the complete diagnostic and therapeutic process of a young girl with RNFP and will retrospectively analyze the previously reported cases, particularly the microscopic and immunohistochemical characteristics.

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## INTRODUCTION

Reactive nodular fibrous pseudotumor (RNFP) is a recently reported lesion that may arise from the gastrointestinal tract or the mesentery. It was first described by Yantiss *et al.*<sup>[1]</sup> in 2003. To date, 20 cases (8 cases in Czech Republic<sup>[2]</sup>, 7 cases in the United States<sup>[1,3,4]</sup>, 2 cases in France<sup>[5,6]</sup>, and 1 case each in Australia<sup>[7]</sup>, Turkey<sup>[8]</sup> and Italy<sup>[9]</sup>) have been reported in the literature. We described the first case in China. All the cases require surgical interventions with or without preoperative pathological examinations because of their typically malignant radiographic results. However, this lesion presents an encouraging prognosis during follow-up. Here we present a case in a young female patient.

## CASE REPORT

A 16-year-old girl from Jiangxi Province with no surgical history or abdominal injury history presented to a local medical institution with an approximately 3-mo history of progressive epigastric discomfort. Gastroscopy suggested a highly suspicious malignant tumor of the gastric cardia and fundus, chronic erythematous exudative antral gastritis and a duodenal bulbar ulcer. For further treatment, the patient was admitted to our hospital. Her abdominal examination revealed light tenderness in the epigastric region. A computed tomography (CT) scan showed a mass (5.8 cm × 3.8 cm × 7.9 cm) in the lesser curvature of the fundus attached to the left adrenal gland with obscure boundaries, and gastrointestinal stromal tumor (GIST) was suspected (Figure 1). Gastroscopy revealed a protruding lesion on the back wall of the gastric cardia and fundus with a coarse surface, and an approximately 1.0 cm × 1.0 cm ulcer was located in the middle of the lesion (Figure 2). Gastroscopic pathological biopsy findings demonstrated an ulcer-forming chronic gastritis without evidence of carcinoma (Figure 3); immunohistochemically, the biopsy specimen was positive for CK and M-CEA in the glandular epithelium, positive for CD31 and CD34 in the vascular endothelium, and positive for CD3 and L26 in the small lymphocytes. Therefore, lymphoma and gastric cancer were excluded (Figure 4), and additional immunohistochemical diagnostic evidence was needed to differentiate GIST from other differential diagnoses (Figure 5). Further gastroscopic ultrasonography showed an immense mass (approximately 4.8 cm × 3.1 cm) that did not penetrate the serosa with an uneven hypoechoic appearance and blood flow on the back wall of the lesser curvature of the fundus. Approximately 6-7 lymph nodes were found next to the mass, and the largest one was 0.6 cm in size. Based on these findings, the patient was sent to the operating room with a presumptive diagnosis of malignant tumor of the fundus (GIST). Upon exploratory laparotomy, a small nodule (1.0 cm × 1.0 cm) in the lesser omentum was detected, and the main mass (approximately 8.0 cm × 6.0 cm × 5.0 cm) was located in the lesser curvature of the gastric cardia and fundus transmurally infiltrating the stomach and encroaching on the pancreatic body

**Table 1 Antibodies and dilutions used in the evaluation of reactive nodular fibrous pseudotumor**

Antibody	Dilution	Source	Antigen retrieval
CK	0.181	Dako	Heat
Actin	0.181	Dako	Heat
CD34	Working solution	Novocastra	Heat
CD117	0.181	Dako	Heat
S-100	0.736	Novocastra	Heat
Desmin	Working solution	Zsjiangbio	Heat
DOG-1	0.389	Zsjiangbio	Heat
PDGFR	0.181	SANTA CRUI	Heat
Ki-67	0.181	Zsjiangbio	Heat
CD3	Working solution	Zsjiangbio	Heat
L26	0.736	Dako	Heat
ALK	0.111	Dako	Heat
β-Catenin	0.181	Maixinbio	Heat
CD31	Working solution	Novocastra	Heat
M-CEA	Working solution	Novocastra	Heat

and tail, spleen, and left adrenal gland; several swollen perigastric lymph nodes were also visible. Based on the above findings, a total resection of the stomach, pancreatic body and tail, spleen, and left adrenal gland was performed. An esophagojejunal Roux-en-Y anastomosis was used to reconstruct the digestive tract. Postoperative pathologic evaluation revealed a mass (approximately 8.0 cm × 6.0 cm) with a coarse surface transmurally infiltrating the stomach. The gross gastric specimen (15.0 cm × 11.0 cm × 5.0 cm in size) revealed a small depressed region 2.0 cm in size below the main mass. Microscopically, ulcers were detected on the mucosa; the sub-mucosa was composed of mature spindle cells embedded in a dense collagenic hyalinized stroma containing abundant infiltrative lymphocytes, plasmocytes, and hyperplastic lymphoid follicles. No mitosis, necrosis, or nuclear atypia was identified. Other sections including the pancreatic body and tail, spleen, and left adrenal gland and lymph nodes did not reveal any carcinoma tissue, and the staple line also appeared to be microscopically free of tumor. The immunohistochemistry findings of the spindle cells were as follows: actin focally (+), CD34 focally (+), CD117 (-), S-100 (-), desmin (-), DOG-1 (-), PDGFR (-), Ki-67 approximately 2% (+); the immunohistochemistry findings of the lymphocytes were as follows: CD3 (+), L26 (+). Combining the Hematoxylin Eosin (HE) stain and immunohistochemistry, the lesion was diagnosed as RNFP (Figure 6). Postoperatively, the patient's laboratory evaluation revealed elevated white blood cells and platelets. Accordingly, antibiotics, dipyrindamole, and bayaspirin were administered as symptomatic treatment. The patient did well after these interventions and was discharged from the hospital on postoperative day 11. Then, 10 mo later, a follow-up CT scan examination was clear of signs of recurrence and metastatic disease (Figure 7). After more than 2 years of follow-up, the patient did not complain of any discomfort and no signs of recurrence have been found.

HE stained 4-mm slides were cut from paraffin embedded tissue that was processed with 10% buffered formalin. A panel of antibodies (Table 1) was used to evaluate the tumors for the presence of smooth muscle,



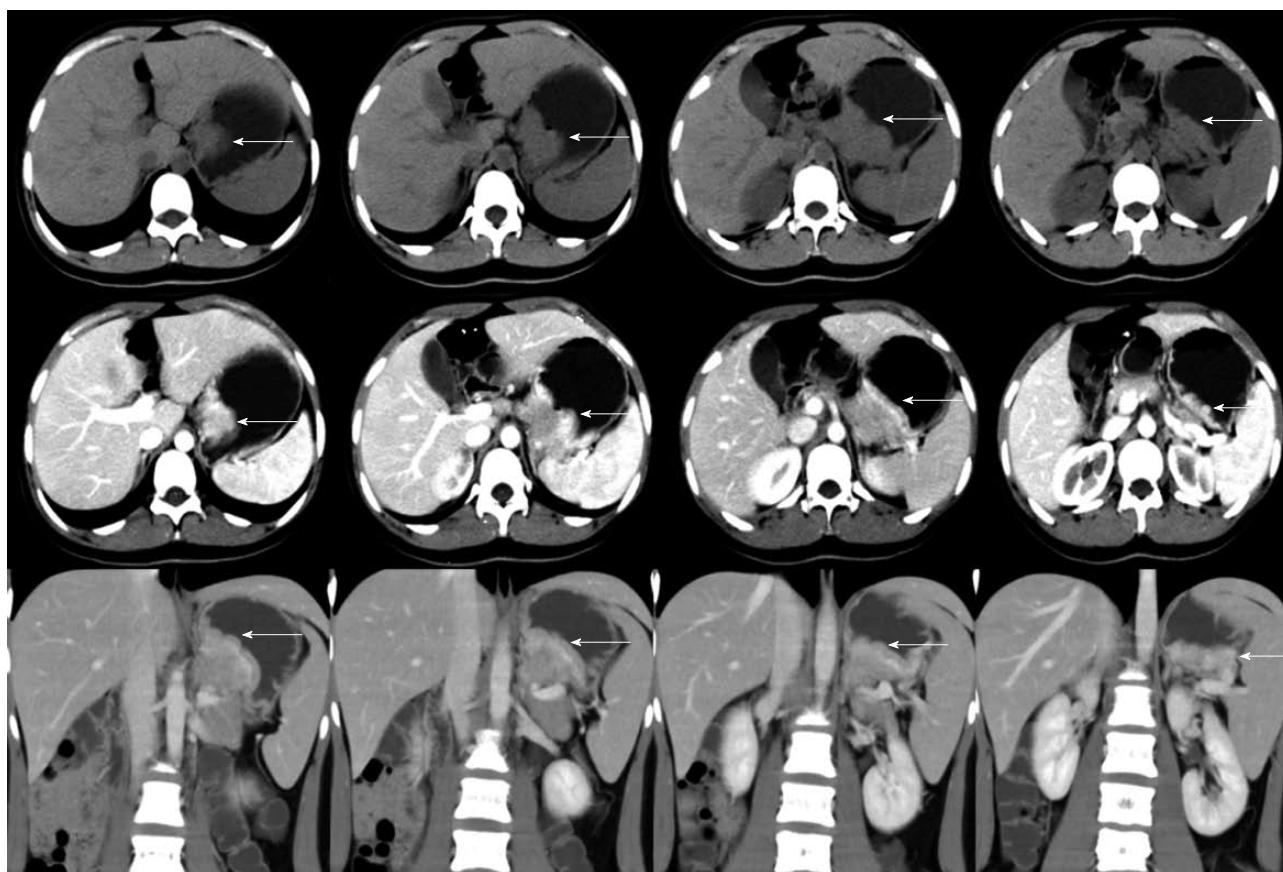


Figure 1 A computed tomography scan showing a mass (5.8 cm × 3.8 cm × 7.9 cm) in the lesser curvature of the fundus attached to the left adrenal gland with obscure boundaries (white arrows).

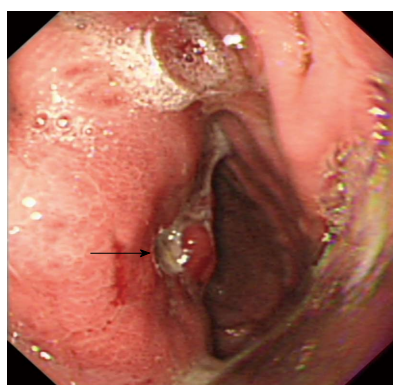


Figure 2 Gastroscopy revealing a protruding lesion on the back wall of the gastric cardia and fundus with a coarse surface, and an approximately 1.0 cm × 1.0 cm ulcer was located in the middle of the lesion (black arrow).

fibroblasts, myofibroblasts, glandular epithelium, vascular endothelium and lymphocytic classification. Several pivotal markers expressed in GISTs (CD117, CD34, DOG-1, PDGFR) and inflammatory myofibroblastic tumors [anaplastic lymphoma kinase (ALK)] were used as well.

## DISCUSSION

The first 5 RNFP cases were reported in adults by Yantiss *et al*<sup>[1]</sup>. The original pathological description was consid-

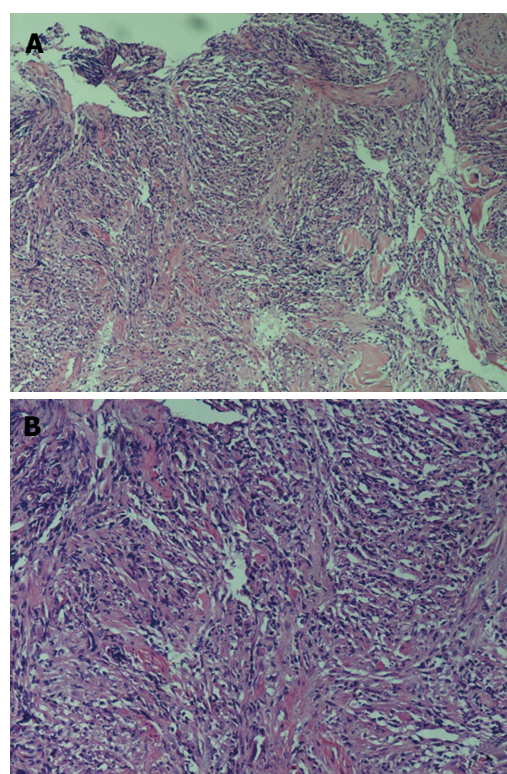
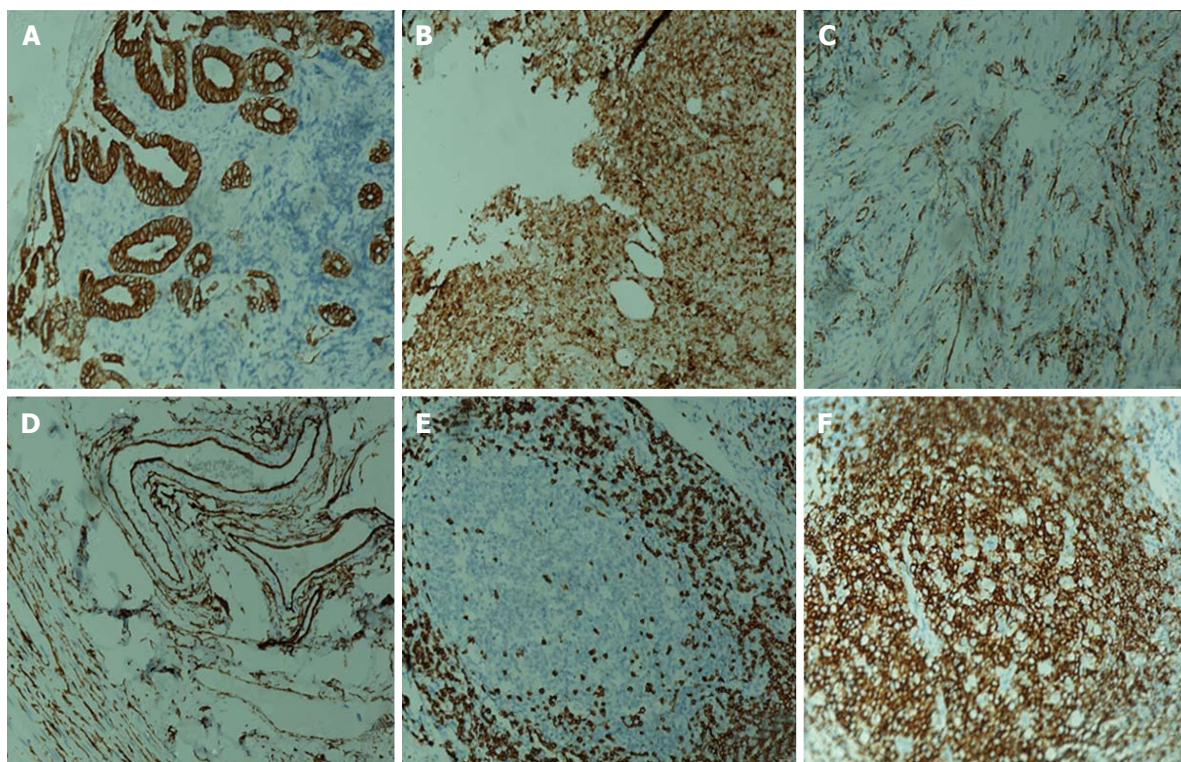


Figure 3 Gastroscopic pathological biopsy findings (Hematoxylin eosin stain) demonstrating an ulcer-forming chronic gastritis without evidence of carcinoma. [Magnification: A (10 × 10); B (10 × 20)].





**Figure 4** Immunohistochemistry of gastroscopic pathological biopsy. A: Glandular epithelium CK (+); B: Glandular epithelium M-CEA (+); C: Vascular endothelium CD31 (+); D: Vascular endothelium CD34 (+); E: Small lymphocyte CD3 (+); F: Small lymphocyte L26 (+). Magnification: 10 × 20.

ered a landmark in the short history of this disease. More recent cases have been reported, and our case represents the 21<sup>st</sup> report of this lesion worldwide in the English literature.

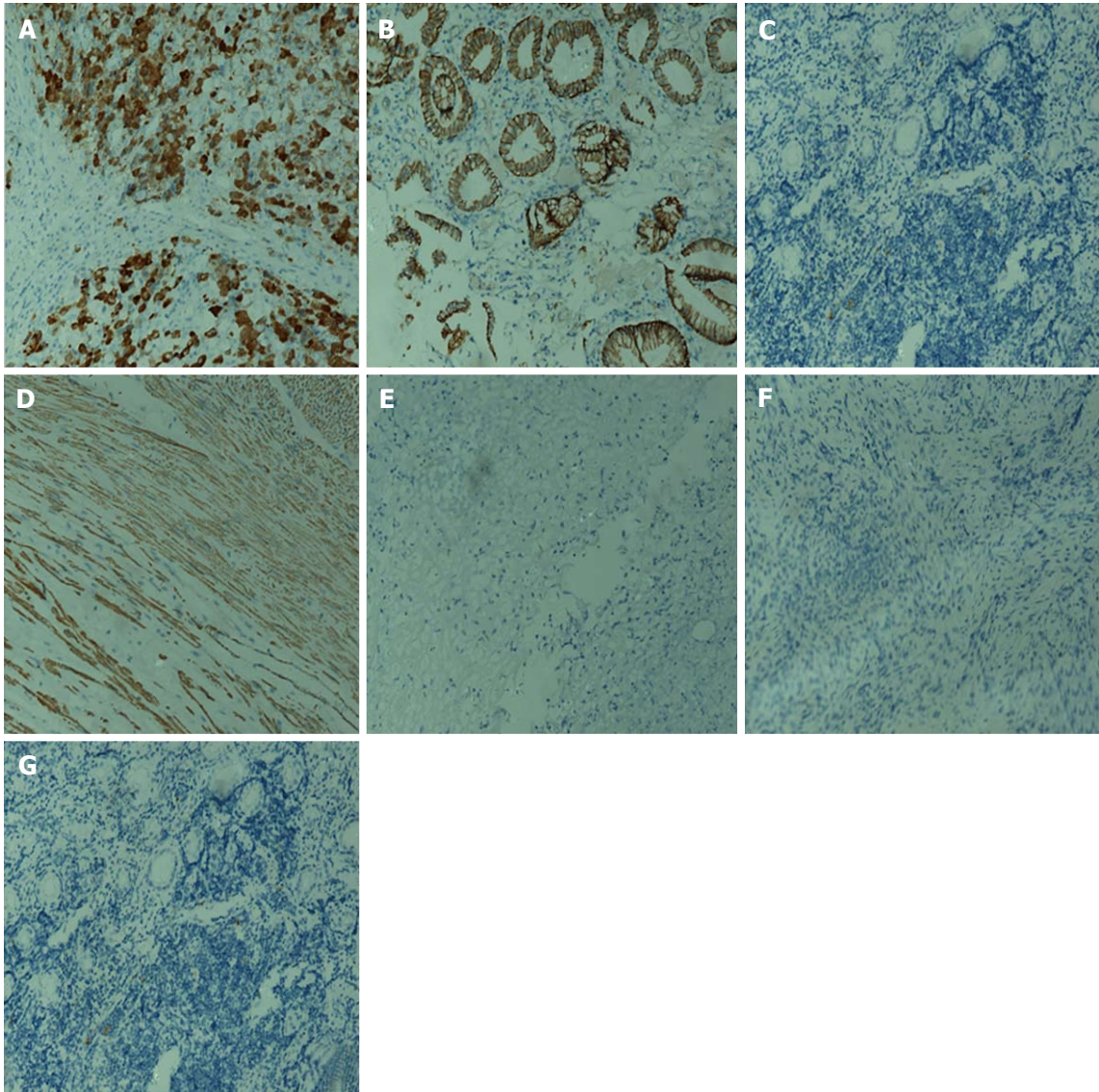
The adult population appears to be the main target in terms of the age distribution. A total of 18 adult cases (85.7%, age range, 22-72 years) have been reported compared to 1 case in a 1-year-old boy, 2 cases in a 13-year-old girl and our case of a 16-year-old girl. The average age is 46.1 years old (male: 49.6; female: 39.1). The sexual distribution ratio is 2:1 (male to female) consisting of 14 males (66.7%) and 7 females (33.3%). Unquestionably, males are more predisposed to this disease. The leading clinical characteristics can be summarized as follows: 11 patients including our case presented with abdominal symptoms, among which 4 patients had acute abdominal pain while 3 had chronic abdominal discomfort. Past medical history revealed that 5 patients (23.8%) had a history of abdominal surgery. One patient had undergone a left hemicolectomy 17 years previously for stage pT-3N0MO-II A colon cancer according to the 7<sup>th</sup> American Joint Committee on Cancer<sup>[9]</sup>. Yantiss *et al*<sup>[11]</sup> reported a patient with a history of alcoholism and recurrent pancreatitis, complicated by necrotizing pancreatitis, which required multiple surgical debridements. Another patient had a history of MEN-1 syndrome and multiple abdominal surgeries, including resections of an endocrine tumor of the pancreatic tail and an adrenal adenoma 23 and 21 years previously, respectively; one patient had a history of a laparoscopic cholecystectomy and resection of a

duodenal gastrinoma 1 year before the development of this tumor-like mass. The fifth patient's surgical history included a cholecystectomy some years prior for cholecystitis and an operation in 2001 for a strangulated hernia<sup>[7]</sup>. A significant abdominal medical history was noted in 9 cases (42.9%), including the following: a peptic ulcer in 3 cases (containing our case); a perforated duodenal diverticulum in a 32-year-old man; endometriosis together with ergotamine use for migraine in a 28-year-old woman; chronic bowel obstruction complicated by an external fistula in a 30-year-old woman; ileus caused by a tumor of the ileum in a 22-year-old man; and ingestion of a foreign body in 2 cases (in one case, it was an iron pin, and in the other, it was a small abscess cavity containing foreign bodies). Hence, in 14 patients (66.7%), a medical or surgical abdominal history appears to play a vital role in the development of RNFP.

In 2004, Daum *et al*<sup>[2]</sup> first suggested that RFNP originated from multipotent subserosal progenitor cells rather than myofibroblasts; therefore, some scholars had addressed the importance of investigating a patient's past abdominal surgery and medical history because such conditions could more or less trigger the occurrence of these lesions' and illustrated its reactive nature. The general findings were that these lesions represented an exuberant inflammatory response rather than a true tumor. However, our case was similar to the minority of RNFPs without a previous abdominal surgery or injury.

RNFP presented with multiple masses or, a bit more frequently, as a single mass (13 cases, 61.9%). All of the





**Figure 5** More immunohistochemistry of endoscopic pathological biopsy. A: Anaplastic lymphoma kinase (+); B:  $\beta$ -catenin (+); C: Desmin (-); D: Actin (+); E: CD117 (-); F: DOG-1 (-); G: S-100 (-). Magnification:  $10 \times 20$ .

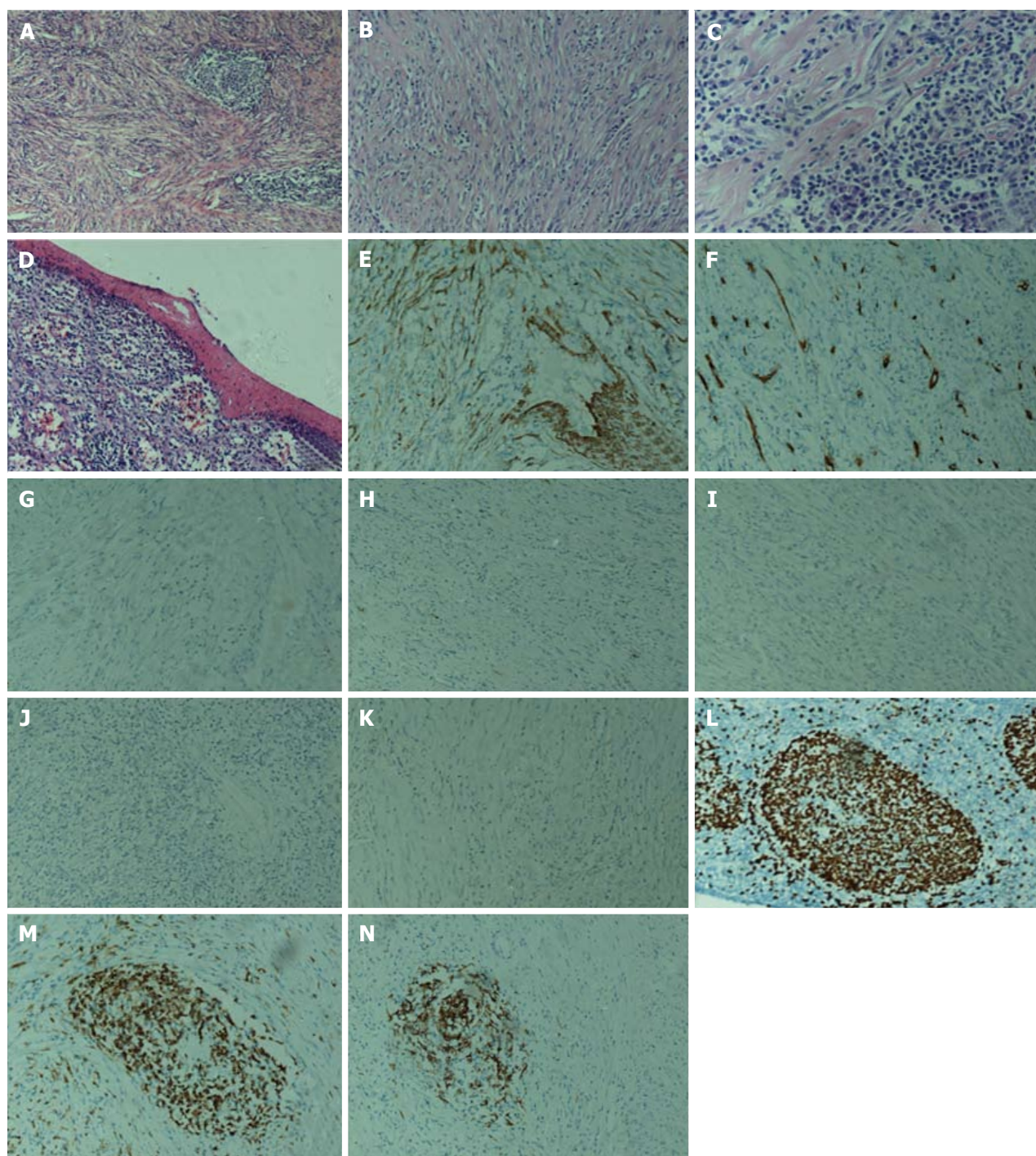
cases underwent complete resections (18 cases, 85.7%) except 3 cases in which incomplete resections were performed because of too many masses or nodules. One patient was a 71-year-old man with multiple hepatic deposits<sup>[9]</sup>, and in a 28-year-old woman, numerous nodules presenting on the surface of the ovaries, appendix, the bowel mesentery, the abdominal peritoneal wall, and the omentum were detected<sup>[8]</sup>. The anatomic site of the main lesions most commonly involved the colon with the appendix (7 patients) followed by the mesentery and the small bowel (especially the terminal ileum) (7 cases each), omentum (2 cases), the peritoneal wall (3 cases), the hepatic capsule, the gastric wall, and the peripancreas (1 case each). Our case was the first to be diagnosed as RNFP transmurally infiltrating the stomach, encroaching on the pancreatic body and tail, the spleen, and the left adrenal gland. Commonly, RNFP lesions are depicted as firm and of light colors from whitish to tan or gray; rarely, calcifications are present in the lesions (3 cases, 14.3%)

(Table 2).

Microscopically, all of the lesions shared the same feature consisting of a paucicellular proliferation of spindle or stellate cells embedded in a hyalinized matrix and sometimes surrounded by inflammatory cells (mostly in the form of mononuclear lymphoid cells) or lymphoid aggregates. If a lesion contains foreign bodies, dispersed giant cell granulomas are observed. Characteristically, the lesions do not show mitosis, necrosis, or nuclear atypia.

Ultra-structural examination of 3 cases by Daum *et al*<sup>[2]</sup> revealed spindle or stellate-shaped cells with rare intercellular junctions and irregular nuclei, prominent rough endoplasmic reticulum, sparse pinocytotic vesicles, bundles of microfilaments attached to dense bodies, and focal investment by external lamina. These features were typical of myofibroblastic differentiation. In addition, genetic investigations revealed no substitutions, deletions, or insertions occurring in exon 11 of the c-kit in 7 specimens. Likewise, no deletions or insertions in part of





**Figure 6 Hematoxylin Eosin stain.** A-D: Microscopically, sub-mucosa composing of mature spindle cells embedded in a dense collagenic hyalinized stroma containing abundant infiltrative lymphocytes, plasmocytes, and hyperplastic lymphoid follicles with incomplete capsule. No mitosis, necrosis, or nuclear atypia was identified; E-N: Immunohistochemistry, spindle cells: E: Actin focally (+); F: CD34 focally (+); G: CD117 (-); H: S-100 (-); I: desmin (-); J: DOG-1 (-); K: PDGFR (-); L: Ki-67 approximately 2% (+); lymphocytes: M: CD3 (+); N: L26 (+). Magnification: A ( $10 \times 10$ ); B, D-N ( $10 \times 20$ ); C ( $10 \times 40$ ).

exon 9 were observed. As above, ultra-structural analysis was performed by Yantiss *et al*<sup>[1]</sup> in 1 case, and the spindle or stellate-shaped cells were shown to contain abundant rough endoplasmic reticulum, aggregates of filaments associating with dense bodies, which are characteristic of fibroblastic and myofibroblastic differentiation.

Immunohistochemical staining demonstrated that all of the lesions stained positively for vimentin, (17/18) SMA, (8/15) CK, (10/13) MSA, except 4 cases that

stained positively for CD117 reported by Yantiss *et al*<sup>[1]</sup> and 1 case reported by Chatelain *et al*<sup>[5]</sup>; most cases are negative for CD117. The vast majority of the lesions stained negatively for desmin, CD34, S-100 protein, and anaplastic lymphoma kinase-1. The immunohistochemical features of our case showed actin focally (+), CD34 focally (+), CD117 (-), S-100 (-), desmin (-), DOG-1 (-), PDGFR (-), Ki-67 approximately 2% (+). Thus, based on these observations, our case is consistent with a diagnosis

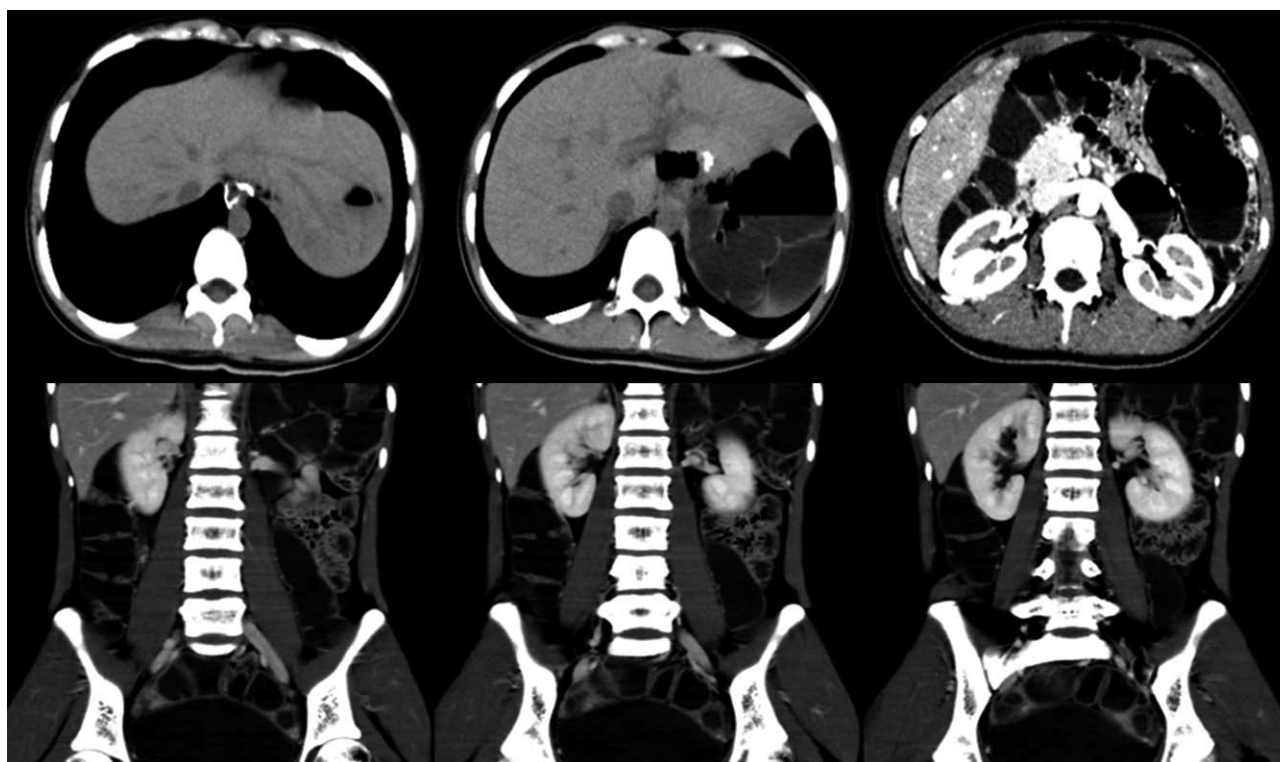


Figure 7 Follow-up abdominal computed tomography scan after 10 mo showing no signs of recurrence and metastatic disease.

**Table 2** Gross anatomopathological characteristic of reactive nodular fibrous pseudotumor reported previously

Ref.	Number of lesion	Size of main lesion (cm)	Morphology	Method of resection	Site of main lesion
<sup>2</sup> Yantiss <i>et al</i> <sup>[1]</sup>	Multiple	6.5 in diameter	Firm, tan-white	Complete resection	Mesentery of small intestine
	Single	4.3 in diameter	Ditto	Complete resection	Peripancreas
	Multiple	5.5 in diameter	Ditto	Complete resection	Mesentery of small intestine and large bowel
<sup>3</sup> Daum <i>et al</i> <sup>[2]</sup>	Multiple	6.5 in diameter	Ditto	Incomplete resection	Mesentery of small intestine
	Single	2.8 in diameter	Ditto	Complete resection	Mesentery of large bowel
	Single	3.0 in diameter	<sup>1</sup>	Complete resection	Small intestine
	Single	<sup>1</sup>	White fibrous, containing an iron pin	Complete resection	Large bowel
	Single	3.0 × 3.0	Fibrous	Complete resection	Large bowel
	Single	10.0 in diameter	Containing a coprolith	Complete resection	Large bowel
	Single	8.0 × 3.0	<sup>1</sup>	Complete resection	Small intestine
	Single	8.0 in diameter	Yellow-white, elastic	Complete resection	Subserosa and mesentery of large bowel
	Single	4.0 × 7.0 × 2.0	Hard fibrous, containing minute calcifications	Complete resection	Small intestine
	Single	3.0 × 4.0 × 6.0	A small abscess cavity containing foreign bodies	Complete resection	Subserosa of large bowel
Chatelain <i>et al</i> <sup>[5]</sup>	Single	9.0 in diameter	Firm, white	Complete resection	Mesentery of large bowel
Zardawi <i>et al</i> <sup>[7]</sup>	Multiple	0.5 × 2.2	Firm, white, containing two gray cord-like structures	Complete resection	Small intestine and the omentum
Saglam <i>et al</i> <sup>[8]</sup>	Multiple	0.6-6.0 in diameter	Firm, tan to white	Incomplete resection	The pelvic and abdominal peritoneum
Gauchotte <i>et al</i> <sup>[6]</sup>	Multiple	1.9-2.2 in diameter	Firm, grayish white	Complete resection	Stomach
Yin <i>et al</i> <sup>[3]</sup>	Single	2.0-3.0 in diameter <sup>4</sup>	Tan, white, containing calcifications	Complete resection	Mesentery of small intestine
Virgilio <i>et al</i> <sup>[9]</sup>	Multiple	6.0 × 4.0 × 3.0	Firm, white, containing calcifications	Incomplete resection	Small intestine, hepatic capsule the left paracolic gutter
McAteer <i>et al</i> <sup>[4]</sup>	Single	8.8 × 3.8 × 2.0	Firm, tan-gray	Complete resection	Mesentery of small intestine

<sup>1</sup>No mention in the above articles; <sup>2</sup>Containing 5 patients; <sup>3</sup>Containing 8 patients; <sup>4</sup>The data from computed tomography scan.

Table 3 Immunohistochemical findings of reactive nodular fibrous pseudotumor reported previously

Ref.	Vimentin	SMA	Cytokeratin (AE1/AE3)	MSA	Desmin	S-100	CD34	CD117	ALK-1	CK5/6	EMA	CAM5.2	34βE12	CD68	PI
<sup>1</sup> Yantiss <i>et al</i> <sup>[1]</sup>	(+) (5/5)	(+) (3/5)	(-) (0/5)	(+) (4/5)	(+) (3/5)	(-) (0/5)	(-) (0/5)	(+) (4/5)	(-) (0/5)	(-)	(-)	(-) (0/5)	(-)	(-)	< 1.0%
<sup>2</sup> Daum <i>et al</i> <sup>[2]</sup>	(+)	Focally (+)	Focally (+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	0%
	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	3.70%
	(+)	Focally (+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	Focally (+)	(-)	(-)	< 1.0%
	(+)	(+)	Focally (+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	< 1.0%
	(+)	(+)	Focally (+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	< 1.0%
	(+)	(+)	Focally (+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	3.50%
	NM	Focally (+)	NM	NM	(-)	(-)	NM	(-)	(-)	NM	NM	NM	NM	NM	< 1.0%
<sup>3</sup> Chatelain <i>et al</i> <sup>[3]</sup>	(+)	Focally (+)	Focally (+)	Focally (+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	< 1.0%
Zardawi <i>et al</i> <sup>[7]</sup>	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	
<sup>4</sup> Saglam <i>et al</i> <sup>[8]</sup>	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	
<sup>5</sup> Gauchotte <i>et al</i> <sup>[6]</sup>	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	
Virgilio <i>et al</i> <sup>[9]</sup>	(+)	Focally (+)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	
<sup>6</sup> McAteer <i>et al</i> <sup>[4]</sup>	(+)	(+)	(+)	Focally (+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	

<sup>1</sup>Containing 5 patients; <sup>2</sup>Containing 8 patients; <sup>3</sup>A few stained positive for actin; <sup>4</sup>Positive for cytokeratin, focally positive with estrogen and progesterone receptors, negative for H-caldesmon; <sup>5</sup>Negative for neurofilament, synapto-physin, calretinin, caldesmon; <sup>6</sup>Negative for β-catenin nuclear staining; NM: No mention; SMA: Smooth muscle actin; MSA: Muscle-specific actin; ALK-1: Anaplastic lymphoma kinase-1; EMA: Epithelial membrane antigen; PI: Proliferative index.

Table 4 General information and clinical feature of reactive nodular fibrous pseudotumor reported previously

Ref.	Gender	Age	Presenting symptoms	Medical history	Follow up
Yantiss <i>et al</i> <sup>[1]</sup>	Male	48	<sup>1</sup>		
	Female	50	<sup>1</sup>	Abdominal surgical history	No residual disease following surgical resection (mean follow-up 16.3 mo) and one patient who had an incomplete surgical resection had stable disease at 26 mo
	Male	53	Acute abdominal pain	<sup>1</sup>	
	Male	57	Acute abdominal pain	<sup>1</sup>	
	Male	71	<sup>1</sup>	Abdominal surgical history	
Daum <i>et al</i> <sup>[2]</sup>	Male	59	Abdominal symptoms	<sup>1</sup>	4 patients are available, without signs of recurrence and metastatic disease 5, 5, 6, and 7 yr, respectively
	Male	46	<sup>1</sup>		
	Male	1	Abdominal symptoms		
	Male	68	<sup>1</sup>		
	Female	30	Abdominal symptoms		
	Female	65	<sup>1</sup>		
	Male	22	Abdominal symptoms		
	Male	41	<sup>1</sup>		
Chatelain <i>et al</i> <sup>[3]</sup>	Male	32	Chronic abdominal pain	<sup>1</sup>	
Zardawi <i>et al</i> <sup>[7]</sup>	Female	72	<sup>1</sup>	Abdominal surgical history	<sup>1</sup>
Saglam <i>et al</i> <sup>[8]</sup>	Female	28	Chronic abdominal pain	Abdominal history	<sup>1</sup>
Gauchotte <i>et al</i> <sup>[6]</sup>	Male	60	<sup>1</sup>	Abdominal history	No evidence of disease 4 mo later
Yin <i>et al</i> <sup>[3]</sup>	Male	65	Acute abdominal pain	No abdominal surgical history	<sup>1</sup>
Virgilio <i>et al</i> <sup>[9]</sup>	Male	71	<sup>1</sup>	Abdominal surgical history	No signs of recurrent 4 yr later
McAteer <i>et al</i> <sup>[4]</sup>	Female	13	Acute abdominal pain	No abdominal surgical history	<sup>1</sup>

<sup>1</sup>No mention in the above articles.



of RNFP (Table 3).

Importantly, RNFP must be distinguished from the other reactive processes of the abdomen [such as calcifying fibrous pseudotumor, Vanek's tumor, retroperitoneal fibrosis, sclerosing mesenteritis, nodular fascitis, intra-abdominal fibromatosis] and more aggressive mesenchymal tumors, such as GIST, intraabdominal inflammatory myofibroblastic tumors, and inflammatory fibrosarcoma; such a differentiation may have strict requirement for pathologists.

Of the 21 patients, almost all cases underwent complete resections (18 cases, 85.7%); incomplete resections were performed in 3 cases because of too many masses or nodules. Surgical resection is currently the definitive method in these patients, and no chemotherapy treatment has been reported. Follow-up of 11 patients was available, without signs of recurrence and metastasis regardless of the modus operandi (Table 4).

## COMMENTS

### Case characteristics

A 16-year-old girl presented to the hospital with an approximately 3-mo history of progressive epigastric discomfort.

### Clinical diagnosis

Approximately 3-mo history of progressive epigastric discomfort.

### Differential diagnosis

Gastric cancer, colon cancer, acute pancreatitis.

### Laboratory diagnosis

Laboratory tests were within normal limits.

### Imaging diagnosis

A computed tomography scan showed a mass (5.8 cm × 3.8 cm × 7.9 cm) in the lesser curvature of the fundus attached to the left adrenal gland with obscure boundaries.

### Pathological diagnosis

Gastroscopic pathological biopsy demonstrated chronic ulcer-forming gastritis without evidence of carcinoma; immunohistochemically, the biopsy specimen was positive for CK and M-CEA in the glandular epithelium, positive for CD31 and CD34 in the vascular endothelium, and positive for CD3 and L26 in small lymphocytes, therefore, lymphoma and gastric cancer were excluded.

### Treatment

A total resection of the stomach, pancreatic body and tail, spleen, and left adrenal gland was performed, and an esophagojejunal Roux-en-Y anastomosis was performed to reconstruct the digestive tract.

### Related reports

The lesion is not very well understood and did not have predictive biomarkers to indicate reactive nodular fibrous pseudotumor.

### Term explanation

Actin, CD34, CD117, S-100, desmin, DOG-1, PDGFR, CD3 and L26 are immunohistochemical methods that are used for differentiating other tumors.

### Experiences and lessons

In the future, more microscopic and immunohistochemical methods should be developed, and more molecular level studies of these lesions to elucidate the etiology are needed.

### Peer review

This case presented in this article is well documented and interesting as it describes a rare pathology.

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