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Synchronous early gastric cancer and gastrointestinal stromal tumor in the stomach of a patient with idiopathic thrombocytopenic purpura

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The synchronous occurrence of gastrointestinal stromal tumour (GIST) in the stomach and early gastric cancer is uncommon, with only a few previous reports. In particular, the collision of GIST and early gastric cancer in a patient with idiopathic thrombocytopenic purpura (ITP) has never been reported. We present the case of a 78-year-old male patient with ITP who was diagnosed with a synchronous development of GIST and early gastric cancer of the stomach. He underwent an elective subtotal gastrectomy with splenectomy. We discuss whether the development of GIST in the stomach in concert with early gastric cancer is an incidental coexistence or involve the same carcinogenic agents. Furthermore, it is not known whether or not such a situation is connected with ITP. To our knowledge this is the second report of a small GIST concomitant with an early gastric cancer and the first one in a patient with ITP.

INTRODUCTION

Gastrointestinal stromal tumors (GIST), which primarily arise in the gut wall, are uncommon mesenchymal, malignant or potentially malignant tumors affecting the gastrointestinal tract. These tumors are defined as specific, generally KIT (CD117)-positive and KIT or platelet-derived growth factor receptor alpha (PDGFRA) mutation-driven tumors.[1] Prognostic markers include the tumor size, mitotic rate, high-power fields (HPF), tumor necrosis, and Ki-67 (MIB-1) index.[2] Synchronous development of a GIST in the stomach and early gastric cancer is uncommon.[3] Most published series report the synchronous occurrence of GIST with adenocarcinomas in the stomach or other primary gastrointestinal neoplasms which have often been detected incidentally on the gastric mucosa or serosa at surgery or gastroscopy.[4,5]

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In this article we present a very rare case of a small stromal tumor concomitant with an early gastric adenocarcinoma in a patient with idiopathic thrombocytopenic purpura (ITP), evaluate clinical and pathologic features of this association and provide an English literature review.

CASE REPORT

A 78-year-old man with a past medical history of a peptic ulcer and ITP presented with a 3-month history of dyspeptic symptoms, nausea and weight loss. There was no associated fever, vomiting or localized abdominal pain. His physical examination and blood biochemistry were within normal rates. Hematological tests showed a decrease of hematocrit (Ht: 31.5%) and platelets (PLT) count of 76,000/μL. The patient was HIV 1–2 negative. CEA and CA 19–9 were in the normal range. An upper gastrointestinal endoscopy showed mucosal ulceration and edema located on the antrum, proximal to the pylorus in the anterior gastric body (Fig. 1). Multiple mucosal biopsies were obtained and a histological examination revealed gastric adenocarcinomas. Abdominal computed tomography demonstrated an enlarged spleen.

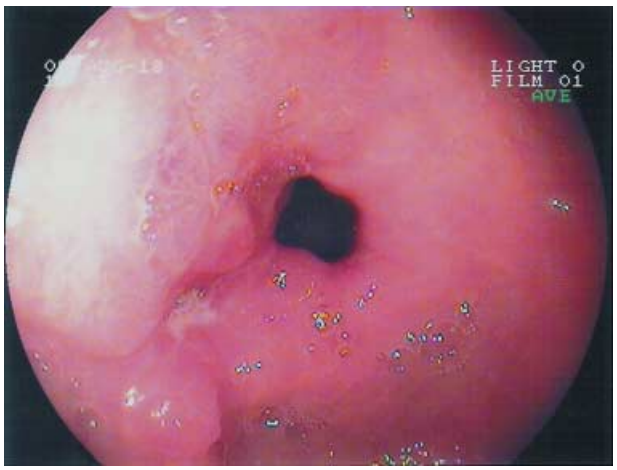

Figure 1. Endoscopic view of an early gastric cancer located on gastric mucosa.

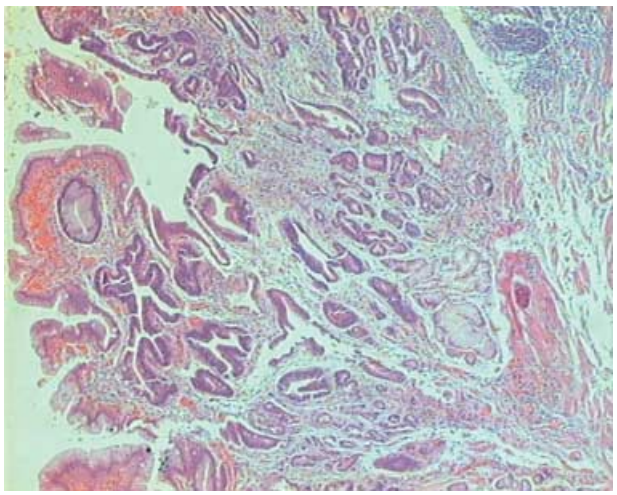

Figure 2. Early gastric cancer invading mucosa (HE ×25).

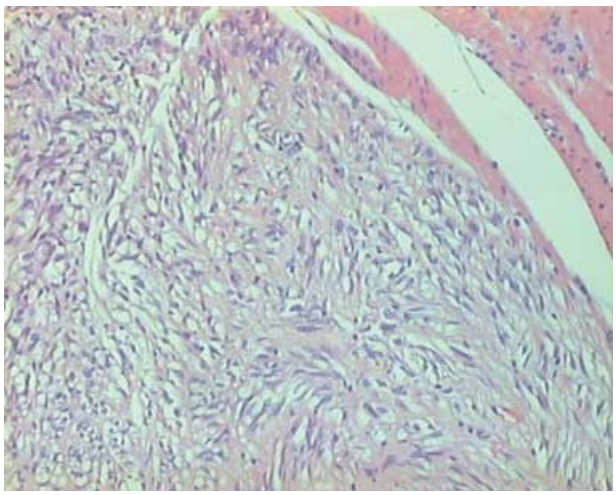

Figure 3. Gastrointestinal stromal tumor consisting of spindle cells without atypia (HE ×100).

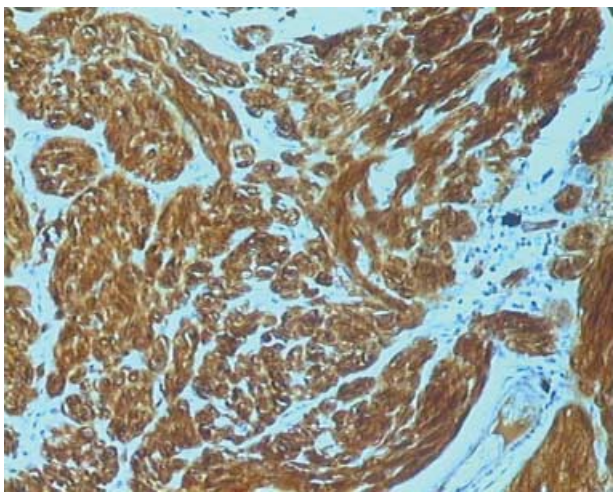

Figure 4. Positive CD117 (c-kit) immunostaining (HE ×100).

The patient underwent an elective subtotal gastrectomy with a splenectomy and a Roux-en-Y reconstruction was performed. During surgery a well-circumscribed white lesion measuring 0.9 cm was seen. This lesion was not connected to the gastric cancer but was located on the subserosa of the antrum in the anterior body of the stomach, 3.5 cm distal from the proximal hilum of the gastric cancer. The patient had an uneventful post-operative course with increase of the PLT count and was discharged on the ninth postoperative day.

The histopathological examination of the subtotal gastrectomy revealed a moderately differentiated early gastric intestinal-type adenocarcinoma which had not reached the serosal or muscular surface (Fig. 2). The histopathological examination of the subserosal solid lesion identified it as a stromal tumor (Fig. 3). The stromal tumor displayed whirling sheets of spindle cells without any phenomorphism or atypia. Mitosis and necrosis were not observed. Immunohistochemical staining for CD117 (Fig. 4), CD34, a smooth-muscle actin (SMA), and S-100 protein was positive, whereas staining for desmin and CD57 was negative. The labeling index for MIB-1, determined by counting positively stained nuclei, was about 1%.

DISCUSSION

GIST are the most common mesenchymal tumors of the gastrointestinal tract.[6] They occur from the lower esophagus to the anus. The most common sites are the stomach (60%), jejunum and ileum (30%), duodenum (5%), and colorectum (<5%) while a few cases (<1%) have been reported in the esophagus and appendix.[7] Adults older than 50 years, with median ages varying around 60 years, are more likely to experience GIST. Although these tumors usually develop in a sporadic fashion, familial occurrence has also been reported.[8] GIST are often incidentally found during imaging studies in the deeper stroma and the submucosa. In our patient a small GIST was located on the subserosa of the antrum in the anterior body of the stomach, 3.5 cm distal from the proximal hilum of the early gastric cancer. GIST was not found during upper gastrointestinal endoscopy but was detected incidentally at surgery and confirmed with the histological examination of the specimen.

Symptoms depend on tumor size and location. The most common presentation of GIST is gastrointestinal bleeding, which may be acute or chronic, leading to anemia. They often present with non-specific symptoms such as nausea, vomiting, abdominal pain and metastatic diseases. In this case the patient presented with a 3-month history of dyspeptic symptoms, nausea, weight loss and anemia.

Up to 70% of gastric GIST can be histologically classified into eight subtypes, four of which describe spindle cell and four which describe epithelioid tumors: sclerosing spindle cell, palisading-vacuolated, hypercellular, sarcomatous spindle cell, sclerosing epithelioid, discohesive epithelioid, hypercellula, and sarcomatous subtypes.[9] Many studies emphasize the expression of CD117 and CD 34 in GIST.[2,10] In our case, GIST was diagnosed as a very low-risk potential malignancy with spindle cells without any phenomorphism, atypia, mitosis or necrosis. Immunohistochemical staining for CD117, CD34, SMA, and S-100 protein was positive.

In general, complete excision is the main treatment. Small GIST (<5 cm) can be treated by a wedge gastric resection while larger tumors may require a subtotal or total gastrectomy. Patients with unresectable tumors or with metastatic disease are treated with KIT/PDGFRA tyrosine kinase inhibitors. Metastases may develop in the abdominal cavity, liver, bones, soft tissues, skin, lymph nodes and lungs 10–15 or more years after primary surgery. Patients with advanced GIST which progress rapidly and result in organ destruction have a poor prognosis. A subtotal gastrectomy with splenectomy due to ITP was performed to our patient.

The simultaneous occurrence of GIST and early gastric cancer is very uncommon in the literature. To the best of our knowledge only one case has been reported.[3] Most published studies report GIST as being concomitant with gastric adenocarcinomas intermixed with gastric lymphomas or with carcinoid tumors and this has also been documented in case reports.[4,5,11] We have found no published studies about the synchronous development of GIST and early gastric cancer in patients with ITP.

Searching the literature, we found various hypotheses about the synchronous occurrence of stromal tumors and adenocarcinomas.[5,12] It is possible that the same theories are valid for the simultaneous occurrence of GIST and early gastric cancer. No known hypotheses were found for the particular case of a coinciding ITP. It is not known whether this association is a simple incidental coexistence or whether it is casually connected; however, it is certain that more investigations are needed.

In conclusion, we report the second case of a simultaneous occurrence of a small GIST and early gastric cancer, showing positive staining for CD117 and CD34. This is also the first known report of this simultaneous occurrence in a patient with ITP.

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