A Large Prolapsed Inflammatory Fibroid Polyp of the Esophagus: An Unusual Presentation

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The inflammatory fibroid polyp (IFP) is an uncommon benign tumor of the gastrointestinal tract. The tumor was first described in 1949 by Vanek as a gastric submucosal granuloma with eosinophilia.[1,2] It has also been referred to as a Vanek tumor.[3] The term inflammatory fibroid polyp was coined by Helwig and Ranier in 1953.[1,4] The IFP is also known as an eosinophilic granuloma,[5] inflammatory pseudotumor,[5] fibroma with eosinophilic infiltration,[5] and polypoid myoendothelioma.[6]

Classically, the IFP is a solitary, polypoid, noncapsulated intraluminal tumor with occasional ulceration.[7-11] Although the stomach is the most frequent site of involvement, IFPs can occur throughout the gastrointestinal tract. Rarely, IFPs can also involve the esophagus,[2,7,8,12-16] duodenum,[17-19] or rectum.[20] Dysphagia is the most common presentation of esophageal IFP followed by gastrointestinal bleeding due to erosions and ulceration on the surface of the polyp.

Case Report

A white man, age 69 years, presented to the emergency room with complaints of gradually worsening retrosternal chest pain of 1 month's duration. The pain was constant, dull, aching, nonradiating, rated as 7 on a 10-point pain intensity scale, and aggravated by swallowing both solids and liquids. The chest pain was also associated with a loss of appetite and a 20-lb weight loss. The patient had no history of nausea, vomiting, abdominal pain, diarrhea, or fever. The patient had smoked 10–15 cigarettes per day and had drank 1–2 beers per day for 40 years. His medical history was significant for gastroesophageal reflux disease (GERD), tuberculosis, and rheumatoid arthritis.

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A physical examination revealed an average-built and nourished patient in no acute distress who had stable vital signs. On admission, the patient's complete blood count and electrolyte levels were within normal limits. A nuclear stress test suggested low risk of a cardiac etiology for the retrosternal chest pain. An esophagogram revealed an intraluminal filling defect in the distal esophagus, which raised concern about the presence of a neoplasm. A computed tomography scan of the chest and abdomen showed dilatation of the entire esophagus, with air fluid within the lumen. There was no evidence of a mass lesion in the distal esophagus or of mediastinal lymphadenopathy.

An esophagogastroduodenoscopy (EGD) showed a smooth, submucosal tumor in the lower third of the esophagus (Figure 1). The tumor extended from 28–39 cm from the incisor teeth. The gastroesophageal junction (GEJ) was identified at 39 cm. A biopsy of the esophageal mass demonstrated fibrocollagenous tissue with acute and chronic granulating inflammation without any evidence of a neoplasm. Special stain was negative for fungal organisms.

After discussing the risks and benefits, the patient underwent surgical resection of the esophageal tumor to alleviate his symptoms. During thoracotomy, the cardiothoracic surgeon was unable to palpate the tumor inside the esophagus. An intraoperative EGD was performed to relocalize the tumor. The distal esophagus was normal, and there was no evidence of a mass or stricture (Figure 2).

On retroflexion in the stomach, a large polypoid lesion was identified. The lesion appeared to be prolapsing through the GEJ and into the fundus (Figure 3). Following an intraoperative endoscopy, a right thoracotomy and exploratory laparotomy were completed with transposition of the stomach into the chest after resection of the tumor.

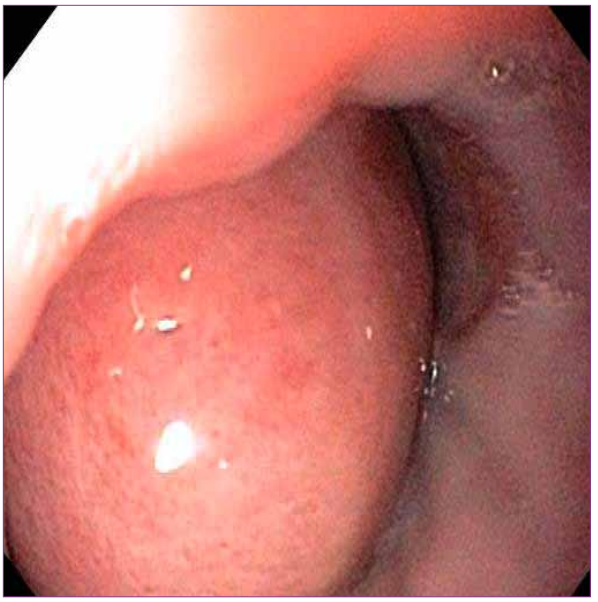

Figure 1. The initial diagnostic esophagogastroduodenoscopy revealed a smooth, submucosal lesion in the lower third of the esophagus.

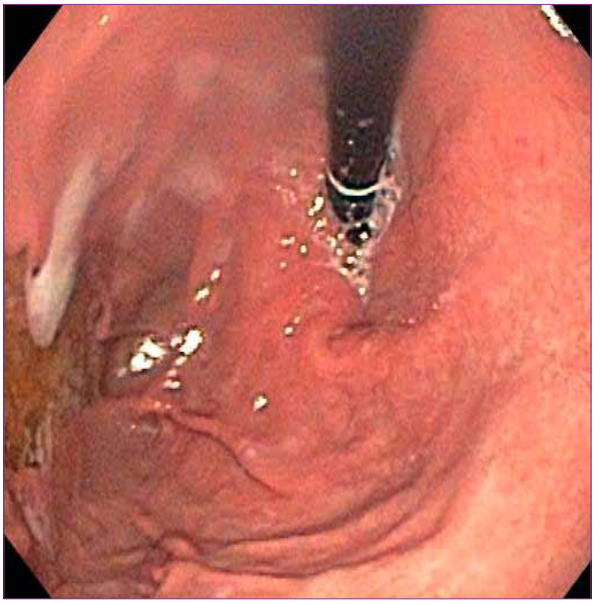

Figure 2. The initial diagnostic esophagogastroduodenoscopy showed normal findings on a retroflexion view.

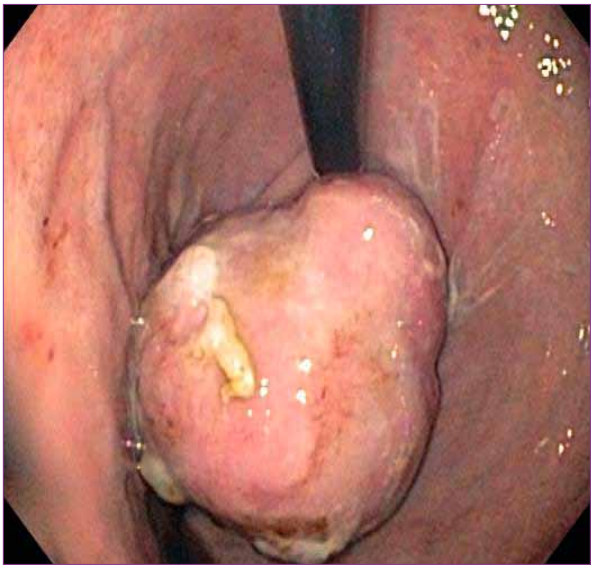

Figure 3. The intraoperative esophagogastroduodenoscopy (retroflexion view) showed a large polypoid lesion that appeared to prolapse through the gastroesophageal junction into the fundus.

Figure 4. A large (7 cm × 5 cm × 4 cm) polypoid lesion with surface ulceration.

The frozen section of the excised tumor showed a 7 cm × 5 cm × 4 cm polypoid submucosal mass at the GEJ with surface ulceration (Figure 4). Histomorphology with immunohistochemical stains showed spindle-shaped stromal cells that were positive for CD34 and SMA (which are expressed in smooth muscle of blood vessels) and negative for CD117, S100, CK7, desmin, BCL-2, and factor VIII (Figures 5A and 5B). These findings were all consistent with a diagnosis of IFP.

The patient's postoperative course was uneventful, and he was discharged home. At 3 months' follow-up, the patient was asymptomatic, and an EGD revealed no residual tumor and a well-healed anastomosis 30 cm from the incisor teeth.

Discussion

Esophageal IFP is a rare, benign tumor. As a result, it is very difficult to establish the incidence of esophageal IFP.[2] Between 1911 and 1972, researchers identified only 1 esophageal IFP among more than 300,000 surgi-

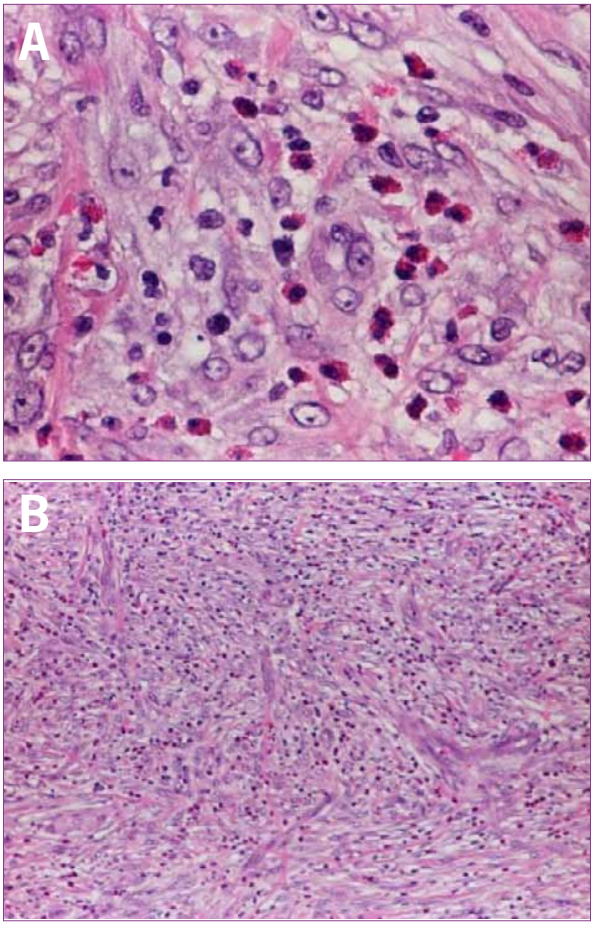

Figure 5. Histopathology revealed **(A)** numerous blood vessels and stroma that were infiltrated with lymphocytes and eosinophils (hematoxylin and eosin stain, high-power view) as well as **(B)** spindle cells in myxoid stroma with inflammatory cells (hematoxylin and eosin stain, low-power view).

cal specimens.[7] To the best of our knowledge, approximately 10 cases of esophageal IFPs have been reported in the literature to date.[2,7,8,12-16]

IFP can occur throughout the gastrointestinal tract. Although the stomach is the most common site of occurrence, IFP also occurs in the small intestine and colon (though less frequently).[2] Esophageal,[7,12,14] duodenal,[2,21] and rectal[2,20] involvement are rare. The majority of IFPs are solitary lesions. However, multiple polyps have been reported in the literature.[2,22,23] A variety of sizes of esophageal IFP have been reported, with the largest being more than 17 cm.[15,24,25] The natural history of IFP is unknown. However, it has been suggested that IFPs may grow rapidly, reaching up to 20 cm within a few months.[16,26]

The pathogenesis of IFP is unknown, and no precise risk factors have been identified for its occurrence.[7] However, several theories have been proposed to explain the histopathologic features of IFP.

Histologically, IFP is an inflammatory mass composed of reactive granulation and fibrous tissue.[7] It has been shown in previous studies that an overly reactive response to mucosal ulcers may play a role in the pathogenesis of IFP.[7] Additionally, the occurrence of an IFP near healing gastric ulcers has been documented.[7,27] Mucosal ulcers on the surface of IFPs were noted in a majority of reported cases.[7] Our patient also had mucosal ulceration on the surface of the IFP, which was seen on a frozen section after resection. Other researchers have suggested that an inflammatory non-neoplastic response to a local stimulus—perhaps acid reflux injury or infectious esophagitis—may give rise to an IFP.[7,9,28] Our patient had GERD symptoms for many years, although he never sought any medical attention for GERD.

The clinical presentation of an IFP depends on its location, size, and associated complications. Occasionally, the IFP could be asymptomatic.[2] The most frequent presentation of esophageal IFP is dysphagia.[2] An esophageal IFP also may present with gastrointestinal bleeding and GERD symptoms.[2,7,12,13,29,30] However, we are reporting an unusual presentation of an esophageal IFP in which the patient's predominant complaints were chest pain and odynophagia.

The diagnosis of IFP usually cannot be made without tissue pathology. On conventional radiography, an IFP appears as a smooth, lobulated mass in the distal esophagus.[2,12] An IFP is similar in appearance to other submucosal pathologies. Even with endoscopy, differentiation of an IFP from other benign esophageal tumors, such as leiomyomas and fibrovascular polyps, is very difficult.

Endoscopically, IFP is seen as a submucosal, polypoid, intraluminal, pedunculated mass that is often ulcerated[7,9-11] and is usually located in the mid or distal esophagus. Leiomyomas, which are also submucosal and polypoid, can have a similar endoscopic appearance to that of IFPs.[7] Fibrovascular polyps, which are located exclusively in the esophagus, can have a similar configuration, but they are typically localized to the upper third of the esophagus, rarely ulcerate, and usually occur on long stalks.[7] Other uncommon polypoid lesions of the esophagus include pseudosarcomas and carcinosarcomas. Consequently, the differentiation of an esophageal polypoid lesion is usually made histologically. In most cases, the diagnosis of IFP will be made postsurgically on histologic specimens, as was the case in our patient.[2] Histologically, IFP consists of regenerative tissue with reactive blood vessels, fibroblasts, and inflammatory cells, including eosinophilic infiltration.[2,7]

The treatment of IFP depends on the location and size of the lesion.[2] Small, pedunculated, gastric IFPs can be successfully removed by endoscopic polypectomy.[2,31,32] However, for IFPs that are larger than 3 cm, the decision to perform endoscopic polypectomy should be weighed against the risk of bleeding, especially when the polyp is not pedunculated.[2] Successful endoscopic removal of a giant (>17 cm) IFP has been reported; in this patient, a detachable loop was used for polypectomy.[24]

In summary, the IFP is a rare, benign tumor of the esophagus. We report an unusual case of prolapsing IFP presenting primarily with chest pain and odynophagia. The diagnosis of IFP was made histologically after surgical resection. The IFP should be considered in the differential diagnosis of chest pain and odynophagia associated with weight loss in the appropriate clinical setting.

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Review

Clinical Pearls on the Diagnosis and Management of a Rare Subepithelial Tumor

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With the widespread use of endoscopic ultrasound (EUS) and evolving endoscopic resection techniques, the diagnosis and management of gastrointestinal subepithelial nodules are increasingly becoming a specialty of endosonographers and therapeutic endoscopists. It is increasingly important for all gastroenterologists to be aware of the spectrum of subepithelial lesions and their clinical implications. As such, the case report by Modi and colleagues[1] offers an opportunity to review a rare subepithelial tumor and the decision-making process surrounding the evaluation and management of this type of lesion.

In 1949, Josef Vanek described several patients with "granulation tissue of a peculiar type associated with eosinophilic infiltration."[2] Inflammatory fibroid polyps (IFPs) have subsequently been recognized as rare benign subepithelial tumors that arise throughout the gastrointestinal tract. The esophagus, along with the anal canal and appendix, are among the rarest locations for IFPs to develop. The case by Modi and colleagues[1] highlights the challenges associated with diagnosing and managing rare intramural tumors.

Little clinical data are available regarding esophageal IFPs. Modi and colleagues[1] identified approximately 10 cases. In the 2 largest series of gastrointestinal IFPs, esophageal lesions comprised only 2 (2%) of 83 tumors and 8 (3%) of 282 tumors.[3,4] The majority of patients with IFPs present in the sixth and seventh decades of life, with a slight female predominance.[3,4] The clinical presentation depends on the location of the tumor and is generally related to the luminal diameter of the involved bowel. Colonic IFPs are most often found incidentally during colonoscopy; in contrast, small bowel lesions frequently present with intussusception, and esophageal or gastric IFPs generally present with abdominal pain.[3] Many of the reported cases of IFPs describe mucosal ulceration, so bleeding and anemia can occur.

The symptoms associated with IFPs are likely related to the large size (range, 2–17 cm) of the lesions at the time of diagnosis.[5,6] Some of the cases reported in the literature occurred before the widespread use of endoscopy and EUS, which may explain why small, incidental esophageal IFPs have not been reported. There are numerous reports of incidentally found IFPs in other areas of the gastrointestinal tract.[3,7]

The diagnosis of an IFP requires histology. There are no pathognomonic features on imaging or endoscopy that differentiate IFPs from similar subepithelial lesions. As demonstrated in the case presented by Modi and colleagues,[1] mucosal biopsies of subepithelial lesions are often insufficient to obtain an adequate histologic specimen for diagnosis. Interestingly, a distinct characteristic of IFPs is extension of the tumors from the submucosa to the mucosal surface. A review of IFP surgical specimens shows mucosal involvement in nearly 90% of tumors.[3] Thus, diagnosis may be more feasible via simple endoscopic biopsy for IFPs than for other subepithelial lesions. Some series have shown a diagnostic biopsy result in over 80% of gastrointestinal IFPs.[3] This diagnosis rate is certainly not achieved for all subepithelial nodules. The high rate of diagnostic result may suggest a role for mucosal biopsies at the time of initial endoscopy if an IFP is suspected.

EUS is a valuable tool in the assessment of subepithelial lesions of the gastrointestinal tract because it can assess wall layer involvement and/or origin. In the case of IFPs, the high prevalence of mucosal extension and diagnostic mucosal biopsies may reduce the perceived utility for EUS evaluation. However, EUS is a valuable adjunct to endoscopic examination to more accurately obtain measurements and define anatomic involvement, especially if attempts at endoscopic resection are being considered. Also, if adequate histology specimens are not obtained on mucosal biopsy, endosonographic features may distinguish IFPs from other lesions, and fine-needle aspiration (FNA) can be performed under EUS guidance.

Three case reports have been published that describe the endosonographic features of esophageal IFPs.[6,8] The IFPs are described as hypoechoic, homogeneous lesions with indistinct margins arising within the second and third layers of the esophagus. One report describes rich vascularity (numerous small blood vessels) within the tumor.[8] These characteristics are identical to the numerous reports of the EUS features of gastric IFPs.[9] FNA

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was not performed in any of the esophageal IFP cases. However, given the utility of FNA for other subepithelial lesions, there may be a role for sampling suspected IFPs with FNA or core biopsy. Given the increased use of EUS in evaluating such lesions, further descriptions of their sonographic features and outcomes of FNA would be a useful contribution to the literature.

All of the reported cases of esophageal IFPs were symptomatic and resulted in either endoscopic or surgical resection.[6,8] However, given the benign nature of these tumors, treatment should be limited to local resection of symptomatic lesions. There are little data regarding the natural history of small, incidentally found IFPs of the gastrointestinal tract. They appear to be slow-growing tumors, although there are reports suggesting rapid growth.[10] It is unclear whether there is a role for prophylactic resection of small tumors to avoid complications that may occur with tumor growth. Early resection of small IFPs may increase the likelihood of successful endoscopic removal and avoid the need for future surgery. Similarly, it is unclear whether surveillance endoscopy should be performed and prophylactic resection undertaken if tumor growth is observed.

Given the significant morbidity associated with esophageal surgery, endoscopic resection should be considered as a first-line approach. Among the reported cases of esophageal IFPs, successful snare resection (both piecemeal and en bloc) has been described.[6,11] Esophageal IFPs are frequently described as pedunculated or semi-pedunculated,[1,10] which may make simple snare resection of the lesion base an ideal approach. There are reports of failed attempts at snare resection due to tumor size,[10] although esophageal IFPs as large as 17 cm have been resected endoscopically.[6] For large pedunculated gastric and colonic IFPs, use of an Endoloop (Olympus) prior to snare resection has been described.[12] Endoloop use could be considered for esophageal IFP resection. For nonpedunculated tumors, injection-assisted endoscopic mucosal resection (EMR) elevates the lesion, minimizes the risk of perforation, and has been described for resection of IFPs in other locations.[13] Endoscopic submucosal dissection has been successfully used for numerous types of subepithelial lesions[14] and would be well suited for esophageal IFPs that are not amenable to traditional EMR.

The clinical outcomes of esophageal IFP resection appear to be excellent. There is 1 report of recurrent disease at the site of prior resection, which was likely related to incomplete endoscopic removal.[5] No reports of lymph node involvement or distant metastasis could be identified in the literature. The majority of case reports describe complete resolution with short or intermediate follow-up. There are more data regarding long-term outcomes of gastric and small bowel IFPs. The largest series with clinical outcome data followed 33 patients for a mean of 55 months and found no recurrence of tumors and no deaths attributable to IFPs.[4]

In summary, IFPs are one of many rare subepithelial lesions encountered in the gastrointestinal tract. It is important for gastroenterologists to be aware of these lesions when encountering a subepithelial nodule or mass. Tissue diagnosis may be obtained on simple mucosal biopsies, and further characterization with EUS with or without FNA should be considered. Treatment is generally reserved for symptomatic lesions, and endoscopic resection should be considered if technically feasible.

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