Late ischemic stricture following anterior rectal resection

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INTRODUCTION

Up to 10-15% of ischemic colitis cases develop strictures (1). Both edema from ischemia and secondary fibrosis have been considered the main mechanisms leading to post-ischemic colonic strictures (2). Despite the fact that colonic strictures after major vascular (aortic aneurisms) surgery are common, very few cases have been reported after colorectal resections (3), and these were often related to peroperative radiotherapy.

The present paper describes a colonic stricture after a low anterior resection performed 5 years before, and not related to radiotherapy, that required a challenging differential diagnosis with a local recurrence of rectal cancer.

CASE REPORT

We report the case of a 65-year-old male patient, smoker of 20-40 cigarettes/day and a history of peptic ulcer. Five years before, a low anterior resection with endo-to-end mechanical (double stapling) anastomosis was performed because of an obstructive neoplasm at the sigmoid-rectal junction (large-bowel adenocarcinoma pT3N0M0; Duke’s B stage; AJCC III-A stage). The postoperative period was uneventful and the patient was enrolled in our follow-up program, including annual colonoscopy and abdominal ultrasounds. During the first 4 years, no abnormalities were found in the perianastomotic area by colonoscopy. Early in the 5th year, the patient reported increased bowel movements with soft stools and abdominal cramps located mainly in the hy-
Later that year, lower GI bleeding was observed and both a CT scan and endoscopy were performed. CT-scan findings were unremarkable but colonoscopy showed an obstructing stricture located 10 cm proximal to the anal verge (Fig. 1). A biopsy of that area showed no histopathologic findings suggesting a neoplasm, but chronic ischemic changes in the colonic wall were reported. Serum tumor markers were normal. No other signs or symptoms were found. A new colonoscopy and a barium enema were also performed. Not only endoscopic but also pathologic findings were consistent with the previous colonoscopy and biopsy. A barium enema showed an irregular 8 cm-long stricture (Fig. 2), suggesting a malignant recurrence. Due to inconsistent findings and no evidence of malignant disease, steroid enemas were prescribed (2 mg budesonide enema q. 12 h) in order to diminish local inflammation and to further allow complete colonoscopy.

One month later, the patient was asymptomatic and a lower endoscopy was repeated. Inflammatory changes and superficial mucosal ulcers were found all over the previously known 6-8-cm stricture. The rest of the large bowel was normal (Fig. 3). Biopsies were repeated and showed nonspecific inflammatory changes again. The stricture was classified as “of ischemic origin”, and outpatient follow-up was planned. Six months later, several abnormal findings consistent with ischemic disease were noticed in a routine electrocardiogram. Both ultrasounds and coronariography revealed a proximal anterior descending artery obstruction with severe impairment of the diagonal artery output and 80% stenosis of the right coronary artery and margo obtusus branch.

Percutaneous dilatation and double-stent placement were performed successfully. After a 16-month follow-up the patient remains asymptomatic with a normal bowel function.

**DISCUSSION**

Usually, colonic strictures cause nonspecific symptoms and may be originated by a large variety of conditions such as trauma, inflammatory events, ischemia, neoplasm, or extrinsic compression. Inflammatory causes include cryptogenetic, autoimmune diseases (ulcerative colitis, Crohn’s disease, amyloidosis, scleroderma,...), infectious diseases, or medications (NSAIDs and triptanes among others). When colorectal strictures occur after an oncologic resective surgery, a malignant relapse must be ruled out immediately due to obvious prognostic implications. Moreover, strictures due to scarring (4), anastomotic leaks, extrinsic compression, and segmentary perianastomotic colonic ischemia have been also reported.

The clinical presentation of colonic strictures is extremely variable and mainly depends on the original cause, degree and rate of vascular occlusion onset, collateral circulation, and comorbidity. More than 20% of patients develop chronic colitis due to irreversible ischemic...
lesions, and suffer persistent diarrhea, lower bleeding, and weight loss. Endoscopic findings usually show strictures or a non-malignant colonic mass (5).

Up to 6% of colonic strictures after oncologic low anterior resections have been reported (6). Differential diagnosis between cancer relapse and ischemic stricture remains a challenging issue (7). In our case, a corticosteroid therapy course was very helpful for diagnosis, allowing us to perform a complete colonoscopy.

Several conditions can explain ischemia after major colorectal surgery. The incidence of ischemic colitis proximal to partially obstructive tumors ranges from 1 to 5.3%, and increased endoluminal pressure has been proposed as a primary pathophysiological mechanism (8). This particular issue seems unlikely in our patient due to the absence of any kind of bowel obstruction and the late onset of the colonic stricture.

Although a 6% incidence of large bowel strictures after preoperative radiotherapy has been published (9), surgical technique appears to be a crucial pathogenic factor (3). Inferior mesenteric artery ligation for sigmoid resections leads to an impairment of the vascular supply for the proximal end, which depends greatly on the marginal artery. Marginal artery supply can also be diminished by vascular diseases, leading to ischemia and subsequent stricture. Moreover, the distal end loses irrigation from the superior rectal artery and depends solely on mid hemorrhoidal branches. Very proximal rectal sections (above the peritoneal reflection) have been classically considered hazardous because the rectal stump vascular supply is poor (Sudeck’s critical point) (10). Although the “critical” adjective has been debated by some authors (11) because of the possibility of a complex vascular anastomotic net between superior, mid, and lower rectal arteries, nowadays there is robust evidence of poor vascularization of that area (12) and colonic strictures due to vascular supply impairment after sigmoid resections have been reported (3). In the present patient, the stricture was located proximal to the anastomosis, and rectal stump vascularization was also preserved. Thus, diminished marginal artery supply seems to be the most likely leading cause. Leaving anatomical abnormalities aside, arteriosclerotic disease is the most important cause of marginal artery occlusion. Even though rare endothelial diseases such as neointimal hyperplasia (13) or vasculitis (14) have been reported, arteriosclerosis remains the most important cause of mesenteric vascular insufficiency. As cardiologic studies revealed, our patient had systemic arteriosclerosis.

Even if the presence of typical endoscopic and pathologic findings can suggest an ischemic origin for colonic strictures, a diagnostic assessment can still be difficult. A selective angiogram usually shows nonspecific images (5) and major adverse events secondary to the procedure have an incidence higher than 15% (15). Visible light spectroscopy during endoscopy has been recently proposed as a diagnostic tool with promising results (16).

Therapeutic strategies for colonic strictures range from surgical resection to conservative medical treatment. Diverse studies have shown acceptable results using
steroids for colonic strictures, but to our knowledge this is the first time steroids are applied using enemas to treat colonic strictures (17). Other endovenous treatments such as PEG1 (18) and pentoxifylline (19) have also been previously used.

Among the different options included in the endoscopic approach, simple dilation with or without endoluminal stent placement and (20) radial electroincision (21) is the gold standard. Long-term results after endoscopic balloon dilatation are successful in more than 70% of cases (22). Endoluminal stents are considered a temporal solution and related to numerous complications (23). On the other hand, promising results using new techniques such as transanal endoscopic resection have been published (20). Often surgical resection of the ischemic segment is preferred when other therapeutic options fail (24).

During follow-up diverse electrocardiographic alterations were found in our patient due to ischemic coronary disease that required double-stent angioplasty. Both coronary disease and mesenteric ischemia share risk factors such as cigarette smoking, hypertension, and hyperlipidemia. In addition, 14% of patients with ischemic colitis develop severe coronary disease with heart infarction during the first 4.5 years after hospital discharge (25). This fact may suggest that routine coronary heart disease screening after ischemic colitis could be helpful.

The differential diagnosis of colonic strictures after colorectal surgery can be extremely difficult because of the possibility of tumor relapse. Its management remains uncertain due to absence of specific diagnostic tests, which makes thorough follow-up necessary.

REFERENCES