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CASE REPORT | ENDOSCOPY

Afferent Loop Syndrome Due to Volvulus of the Afferent Limb

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ABSTRACT

A 78-year-old woman with a history of stage IIB gastric adenocarcinoma with previous Billroth II subtotal gastrectomy was admitted with pancreatitis, with subsequent development of fevers and acute jaundice. Transabdominal ultrasound demonstrated bile duct obstruction. An endoscopic retrograde cholangiopancreatography was attempted, but the lumen of the afferent limb appeared distorted without an obstructing lesion. A computed tomography scan demonstrated volvulus of the afferent limb near the gastrojejunal anastomosis, with afferent limb dilation and significant biliary dilation.

INTRODUCTION

Afferent loop syndrome is a rare but serious complication after foregut surgical procedures such as Billroth II gastrojejunostomy. Common causes of afferent limb syndrome include postoperative adhesions, local tumor recurrence, or internal hernias, which can lead to subsequent obstruction of the biliary tree, resulting in stasis and cholangitis. We report a case of afferent loop syndrome (ALS) due to afferent limb volvulus complicated by acute pancreatitis and cholangitis.

CASE REPORT

A 78-year-old woman with a history of alcohol abuse and gastric adenocarcinoma with Billroth II gastrojejunostomy presented to the hospital with epigastric pain, nausea, and vomiting. The pain had progressed over the course of 2 days and radiated to her back. She was a daily alcohol user who was diagnosed with stage IIB gastric adenocarcinoma 5 years before admission and was treated with subtotal gastrectomy and Billroth II gastrojejunostomy with adjuvant chemoradiation therapy. She had no evidence of disease recurrence on surveillance imaging performed 2 months before admission. She noted that since her gastric surgery, she was unable to consume alcohol due to significant nausea. On physical examination, the patient had a low-grade fever of 100.5°F. No jaundice or icterus was noted. Tenderness to palpation in the mid-epigastric region was elicited without peritoneal signs. Murphy sign was negative. Admission laboratory tests were notable for a mild leukocytosis to 12,000 cells/μL, with elevated lipase and amylase to 700 and 950 U/L, respectively. Liver tests and creatinine were normal on presentation. She was admitted with a presumptive diagnosis of alcohol-related mild acute pancreatitis.

The patient initially responded to conservative management. Three days after admission, she developed acute right-upper-quadrant abdominal pain associated with jaundice, fever (102°F), and hypotension (systolic blood pressure of 80 mm Hg). Laboratory tests were notable for worsening leukocytosis to 18,000 cells/μL, with a total bilirubin of 11.3 mg/dL, direct bilirubin of 7.3 mg/dL, alkaline phosphatase of 101 U/L, alanine aminotransferase of 356 U/L, and aspartate aminotransferase of 653 U/L. Abdominal ultrasound demonstrated common bile duct dilation to 12 mm without filling defects. Blood cultures were obtained, and empiric antibiotics were initiated.

An urgent endoscopic retrograde cholangiopancreatography was attempted given clinical suspicion for ascending cholangitis. Difficulty was encountered with attempted passage of the duodenoscope through the afferent limb that showed evidence of past Billroth II surgery (Figure 1). Gastroscopy was performed, which noted significant deformity and edema of the lumen of the afferent

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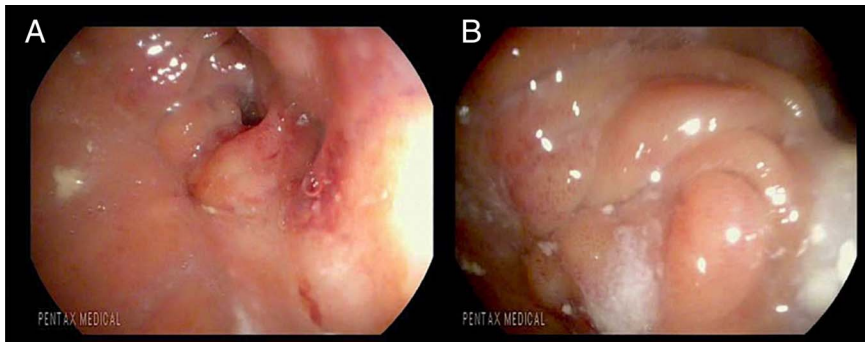

Figure 1. Upper gastrointestinal endoscopy showing (A) the afferent limb and (B) evidence of the Billroth II surgery.

limb without visualized mass or stricture. Computed tomography (CT) scan revealed a volvulus arising from the afferent jejunal limb with proximal jejunal dilation and common bile duct dilation (Figure 2).

Urgent percutaneous transhepatic cholangiography was performed with the placement of an external biliary drain for decompression. An exploratory laparotomy for gastrojejunostomy revision with antecolic Roux-en-Y reconstruction was subsequently performed. She had a complicated postoperative course. She developed pneumonia associated with bacteremia, severe acute respiratory distress syndrome, with multiorgan failure. Despite aggressive medical therapy, she died 2 weeks after surgical revision.

DISCUSSION

Gastric cancer is the third most common cause of death worldwide.[1] For localized cancers, gastrectomy is usually the preferred method of treatment. There has been an ongoing debate on the type of anastomosis (Billroth I, Billroth II, and Roux-en-Y) used to reduce the postoperative complications. One of the uncommon, late postoperative complications is the development of ALS.

A major study reported the incidence of ALS after distal gastrectomy with Billroth II or Roux-en-Y reconstruction as 0.3%–1.0%. Although the exact incidence is unknown, ALS is certainly not rare, especially in antecolic Billroth II gastrectomies.[2] Comparatively, the Sanada study reported a relatively more common occurrence of ALS after pancreatoduodenectomy cases (13%) caused mainly by mechanical obstruction.[3] Some cases of nonobstructive ALS were also seen mainly due to jejunal motility failure or due to the length of the blind loop.

The etiologies of afferent limb syndrome include recurrence of malignancy, entrapment, compression, and kinking of the afferent loop by postoperative adhesions; internal herniation, volvulus, and intussusception of the afferent loop; scarring due to marginal ulceration of the gastrojejunostomy; radiation enteritis of the afferent loop; and enteroliths, bezoars, and foreign bodies affected in the afferent loop.[4] Radiation, peritoneal seeding, and adhesions are the common causes.[4,5] Volvulus and intussusception are uncommon. A case involving afferent loop intussusception has been reported.[6] CT scan has been identified as a useful tool for the diagnosis of ALS.[5,7] Recognition of the characteristic CT findings will avoid both inappropriate procedures and delay in treatment.

Most cases of cholangitis originate due to biliary stasis, which is broadly caused by either anastomotic or nonanastomotic stenosis. The safest and simplest treatment for patients whose original operation was Billroth II gastrectomy is conversion to a Roux-en-Y procedure.[2] Nonobstructive ALS may improve by conservative treatment alone in many cases; the cause is often not identified, thus resulting in many patients suffering repeated cholangitis.[3]

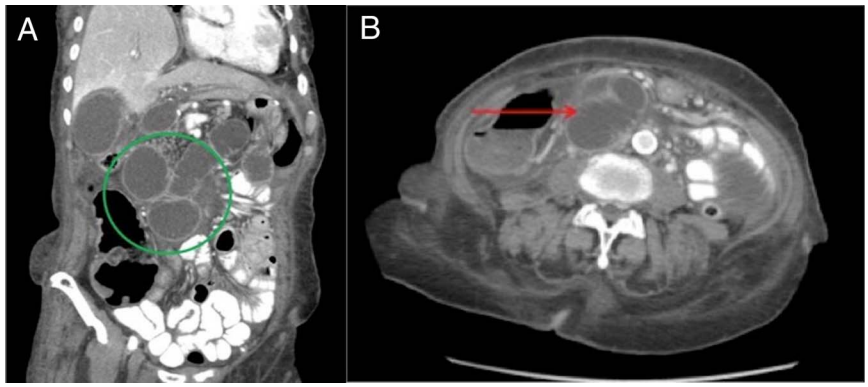

Figure 2. (A) Coronal and (B) transverse sections of the computed tomography scan showing volvulus of the afferent limb (circle and arrow).

Our case demonstrates a rare etiology of afferent limb syndrome. In retrospect, her presumptive diagnosis of alcohol-related acute pancreatitis was incongruent with her reported history of postoperative alcohol intolerance.

In conclusion, afferent limb syndrome should be considered in patients with altered surgical anatomy who present with pancreatitis and/or obstructive jaundice. A low threshold to obtain cross-sectional imaging in these patients may prevent delays in diagnosis. Endoscopic intervention has been used successfully as the first choice, but in certain cases where it does not help relieve the ALS, surgical intervention becomes inevitable. However, reoperation itself poses an increased risk of morbidity and mortality.[4]

DISCLOSURES

Author contributions: A. Desai and A. Manvar wrote the manuscript. S. Ho edited the manuscript and is the article guarantor.

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Informed consent was obtained for this case report.

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REFERENCES

1. Ferlay J, Soerjomataram I, Dikshit R, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer*. 2015;136:E359–86.
2. Bushkin FL, Woodward ER. The afferent loop syndrome. *Major Probl Clin Surg*. 1976;20:34–48.
3. Sanada Y, Yamada N, Taquchi M, et al. Recurrent cholangitis by biliary stasis due to non-obstructive afferent loop syndrome after pylorus-preserving pancreatoduodenectomy: Report of a case. *Int Surg*. 2014; 99(4):426–31.
4. Konstantinos B, Konstantinos AB, Konstantinos T, et al. Management of afferent loop obstruction: Reoperation or endoscopic and percutaneous interventions? *World J Gastrointest Surg*. 2015;7(9):190–5.
5. Kim HC, Han JK, Kim KW, et al. Afferent loop obstruction after gastric cancer surgery: Helical CT findings. *Abdom Imaging*. 2003;28(5):624–30.
6. Lee SY, Lee JC, Yang DH. Early postoperative retrograde jejunojejunal intussusception after total gastrectomy with Rouxen-Y esophagojejunostomy: A case report. *J Gastric Cancer*. 2013;13:263–65.
7. Gayer G, Barsuk D, Hertz M, Apter S, Zissin R. CT diagnosis of afferent loop syndrome. *Clin Radiol*. 2002;57(9):835–39.

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