CT Appearance of Afferent Loop Syndrome*  
— A case report —  

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A case is reported in which the diagnosis of afferent loop syndrome (ALS) was suggested on computed tomographic (CT) scans. The CT findings include two, rounded, fluid-filled, cystic masses of nearly equal diameter adjacent to the head and tail of the pancreas and just anterior to abdominal aorta which on sequential sections can be traced to be the U-shaped afferent loop with marked anterior displacement of superior mesenteric artery (SMA).  

(Key words: CT, Afferent Loop Syndrome)  

The ALS consists of retension of bile and pancreatic juice in an obstructed afferent loop following subtotal gastrectomy and gastrojejunostomy. The diagnosis is made by demonstrating markedly dilated afferent loop, but a firm diagnosis of ALS is difficult to establish prior to exploratory laparotomy because of its similarity to acute pancreatitis and other cystic lesions such as abscesses or pancreatic pseudocysts. We present a case in which this diagnosis was made by findings on abdominal CT scans.

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Case Report

A 47-year-old woman, who had undergone a subtotal gastrectomy and gastrojejunostomy in May, 1985 due to stomach cancer (T3 N1 MO) was admitted to Kangnam St. Mary’s Hospital on Oct. 12, 1985, complaining of nausea, vomiting and abdominal pain. On physical examination, she appeared chronically ill and dehydrated. The abdomen was soft and mildly distended with increased bowel sounds. An ill-defined cystic mass was felt on the mid-upper abdomen. The laboratory values were within normal limits but mild leukopenia was noted probably due to previous chemotherapy. A film of the abdomen revealed a large area devoid of gas in the upper abdomen with downward displacement of the intestinal gas pattern. Barium enema showed smooth indentation of the upper margin of the distal transverse colon with moderate luminal narrowing and tethering of mucosal folds. CT scans were performed and demonstrated two, rounded, fluid-filled, cystic masses of nearly equal diameter located symmetrically just anterior to the abdominal aorta. On the slightly caudal sections, these masses were continuous, suggesting a U-shaped mass. The SMA with marked anterior displacement was seen between the mass and the abdominal wall (Fig. 1). Subsequent UGIS using gastrografin showed markedly dilated afferent loop and irregular narrowing of anastomotic site. The mucosal folds of the junction of afferent loop with stoma were distorted and irregularly thickened. Rigidity

Fig. 1. CT scans demonstrated two masses of water density located between abdominal aorta (A) and SMA (Open arrow), marked anterior displacement of the SMA by these masses and continuity of these masses on the slightly caudal section suggesting a U-shaped mass.

Fig. 2. UGIS using gastrografin showed the markedly dilated afferent loop and irregularity of the fundus wall, but passage disturbance of the efferent loop was not observed.
and irregularity of the gastric fundus were noted, but the passage disturbance of the afferent loop was not observed (Fig. 2). After this study, a confident diagnosis of ALS was made, and palliative chemotherapy and radiotherapy were performed.

Discussion

In the diagnosis of the ALS, a well-known complication of gastric surgery and a symptom-complex that results from partial or complete obstruction of afferent loop, radiologic examinations play an important role. In order to demonstrate the dilated afferent loop, many radiologic techniques have been used and reported in the literature. Barium study may suggest the diagnosis of afferent loop obstruction. If the afferent loop fills at barium study, it is possible to evaluate and understand afferent loop abnormalities. If the loop does not fill, no firm conclusions can be obtained. On barium study in the patients following gastrojejunostomy, we routinely attempt to fill the afferent loop, but failure to demonstrate an afferent loop is not surprising. A delayed film is valuable in evaluating the afferent loop function. Intravenous cholangiogram is also a useful method in the evaluation of postgastrectomy bilious vomiting. Sonography may show a well-defined, dumbbell-shaped, transonic mass extending across the mid-line similar to a pancreatic pseudocyst. Radionuclide imaging with I-131 rose bengal and orally administered Tc-99m colloid may show persistent activity in the afferent loop. CT scans can confirm these findings by visualizing the obstructed segment directly. The CT appearance of ALS was first described by Y. Kuwabara et al as a U-shaped cystic mass that is located between abdominal aorta and SMA, and is continuous with the biliary system.

In this case, CT scans show two cystic round masses of water density at the peripancreatic area, which on sequential sections can be traced contiguously to confirm to the U-shaped afferent loop. The rounded masses represent the duodenal and jejunal portions of the dilated afferent loop. The large cystic mass of the caudal portion consists of the third portion of the duodenum. The location of the masses between abdominal aorta and SMA is a useful finding to differentiate the duodenum from other cystic lesions such as abscesses, pancreatic pseudocysts or cystic metastases. Because these is equalization of intra luminal pressure throughout the obstructed loop, the dilated bowel loops have a nearly equal diameter. Since the increased pressure in the obstructed afferent loop may be transmitted via the common duct to the biliary system, the gallbladder and the extrahepatic and intrahepatic bile duct dilatation may be noted. In this case, since the obstruction of the afferent loop was not severe, the distension of the gallbladder and the common duct was not visualized.

We used CT scans to diagnose a case of afferent loop obstruction due to gastric malignancy and presented a characteristic CT appearance.

REFERENCES