

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

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<국문초록>

### 도입성 장관고리 증후군의 CT 소견

— 1 예보고 —

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도입성 장관고리 증후군은 위수술 특히 위부분절제술 및 위공장문합술후에 발생하는 합병증이다. 이는 도입성 장관고리의 부분 혹은 완전 폐색으로 인하여 담즙이나 췌액이 저류되어 고리확장을 일으킨 상태이다.

저자들은 최근 가톨릭대 부속 강남성모병원 방사선과에서 경험한 위암수술후 오심, 구토와 복부 통을 호소하는 47세 여자환자에서 복부전산화단층촬영상 본 증후군의 특유한 소견을 관찰하였다.

즉 CT 사진상 상복부대동맥 전방에 2개의 낭상음영이 대칭적으로 나타나 있었으며 그로 말미암아 상장간막동맥이 심히 전방으로 전이되어 있었다. 하방단층촬영상에서는 그 2개의 낭종 음영이 서로 연결되어 전체적으로 U자 모양의 음영을 형성함으로써 확장된 도입성 장관고리 자체를 직접 나타내는 소견을 관찰할 수 있었다.

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 gastrografen 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

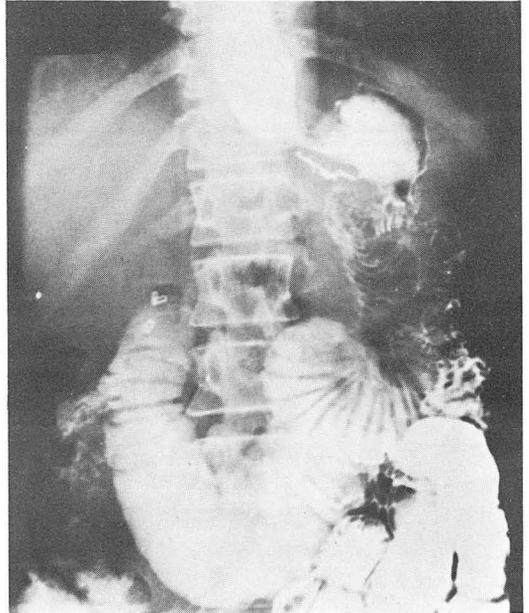


Fig. 2. UGIS using gastrografen showed the markedly dilated afferent loop and irregularity of the fundus wall, but passage disturbance of the efferent loop was not observed.

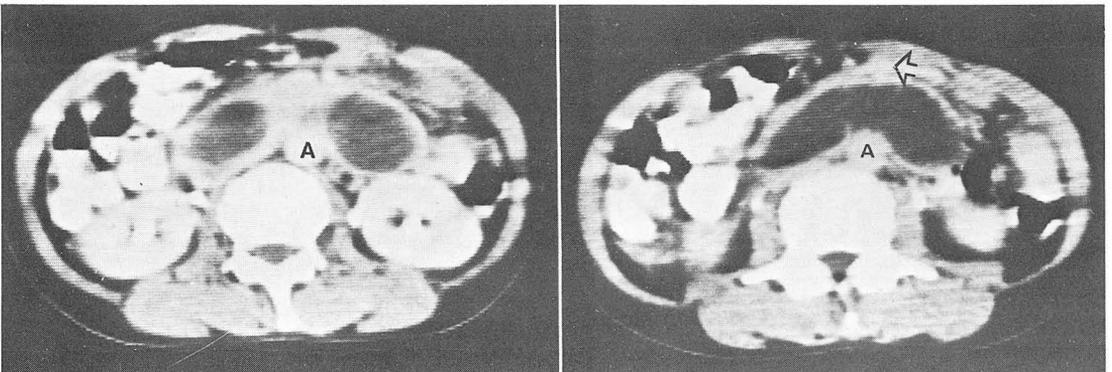


Fig. 1. CT scans demonstrated two masses of water density located between abdominal aorta (A) and SMA (Open arrow), marked anterior displacement of the SMA by these masses and continuity of these masses on the slightly caudal section suggesting a U-shaped mass.

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.<sup>1)</sup> 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.<sup>2,3)</sup> Intravenous cholangiogram is also a useful method in the evaluation of postgastrectomy bilious vomiting.<sup>4)</sup> Sonography may show a well-defined, dumbbell-shaped, transonic mass extending across the mid-line similar to a pancreatic pseudocyst.<sup>5)</sup> Radionuclide imaging with I-131 rose bengal and orally administered Tc-99m colloid may show persistent activity in the afferent loop.<sup>4)</sup> 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.<sup>6)</sup>

In this case, CT scans show two cystic round masses of water density at the peripan-

creatic 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.<sup>6,7)</sup> 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.<sup>6,7)</sup> Because there 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.<sup>7)</sup> 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.

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