Case Report

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Duodenum Inversum – An obscure cause of Gastric Outlet Obstruction

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ABSTRACT

Duodenum Inversum is a rare congenital anomaly that can produce symptoms due to gastric outlet obstruction. We report a case of a 56-year man who presented with features of delayed gastric emptying owing to duodenum inversum, which was managed successfully by prokinetic agents. The diagnostic modalities and management strategies are presented and the relevant literature has been reviewed.

KEY WORDS: Duodenum Inversum, Duodenum, Gastric Outlet Obstruction, Prokinetics, Barium meal; Congenital.

BACKGROUND

Duodenum Inversum is a rare congenital anomaly of the gastrointestinal tract in which the third part of the duodenum is located to the right of second part or above the duodenal bulb [1]. In this, the normal curve of the duodenum is reversed so that the third portion, instead of turning to the left, turns to the right and takes an upward course, curving then to the left and crossing the midline above the pancreas. Duodenum Inversum is thought to predispose to cholecystitis, pancreatitis and peptic ulcer disease [2].

Duodenum Inversum is frequently asymptomatic. The commonest symptom is epigastric pain or discomfort; however, nausea, belching, bloating, and dyspeptic symptoms are also not uncommon. Loss of weight, anorexia, and headaches may also occur [2]. Many of the symptoms are because of stasis in the duodenal loop. Symptoms are usually relieved by conservative treatment, including rest and dietary modifications [1].

CASE PRESENTATION

A 56-year man presented to the surgical out patients department with history of postprandial fullness, and pain in the epigastrium that was relieved by vomiting. Examination was unremarkable except for epigastric fullness. Patient was admitted with the clinical impression of gastric outlet obstruction and was started on intravenous fluid and was given nothing per oral. A nasogastric tube was inserted and active suction was done. Routine blood chemistries were within normal limits. An upper Gastro-intestinal endoscopy was done after 48 hours of admission that revealed congested mucosa of the stomach. Pyloric canal was open and it was possible to identify the first part of duodenum, however, the endoscope could not be advanced into the second part of duodenum.

A barium meal follow through was ordered that revealed reversal of the normal curve of the duodenum. The third portion of the duodenum abnormally turned to the right and took an upward course before curving to the left (Figure 1). As the patient was not having complete duodenal obstruction, the patient was put on dietary modification, namely semisolid meals in frequent intervals. In addition, a prokinetic (Cinitapride 3mg) was prescribed at bedtime for 3 weeks and he was advised to take frequent semisolid meals at frequent intervals. This modified diet was continued till the completion of treatment i.e. 3 weeks. During a 3-month follow-up period, the patient remained symptom-free and clinically well.

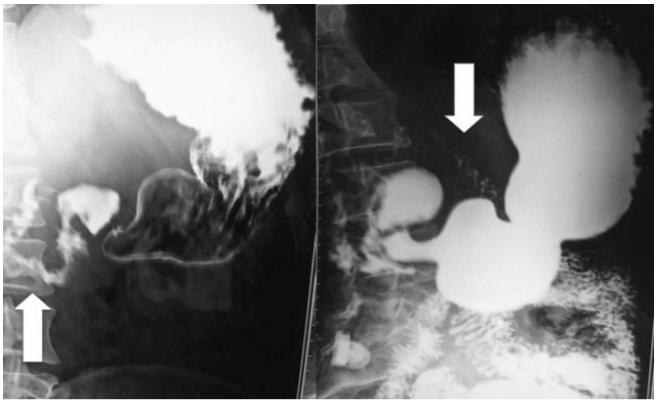

Figure 1. Barium Meal showing the reversal of normal curve of duodenum

DISCUSSION

Duodenum Inversum, also known as inverted duodenum or duodenum reflexum, is a congenital malformation in which the third portion of the duodenum, instead of continuing left toward the ligament of Treitz, reverses direction and travels in a superior, posterior track prior to crossing the midline above the pancreas. It is also known as inverted duodenum or duodenum reflexum. When the third part is seen only to the right of the second part and is not above it, it is known as partial Duodenum Inversum or figure of eight duodenum. Feldman and Morrison [1] reported 14 cases of duodenum Inversum in 20,000 gastro-intestinal x-ray examinations, with an incidence of 0.07 per cent, but only 18 cases of Duodenum Inversum have been reported since 1950 [2].

Persistence of the dorsal mesentery with a mobile duodenum is thought to be a predisposing factor for Duodenum Inversum. Other congenital anomalies in fixation or position of the right kidney, pancreas, and transverse mesocolon are commonly associated with it. Duodenum Inversum should be differentiated from redundancy of the first part of the duodenum, malrotation, closed duodenal loops and left-sided duodenum of situs inversus. Duodenum Inversum may also mimic superior mesenteric artery syndrome [3].

Feldman and Morrison classified Duodenum Inversum into four types [1]. The first type is classified as a complete inversion of the duodenum with an absence of the duodenal curve. Type 2 is defined by the presence of the duodenal curve. Type 3 has a duodenal curve with marked redundancy of the duodenum. Type 4 is defined as duodenum inversum associated with malrotation. However, the value of this classification is limited [4]. Our patient had a type 1 duodenum inversum.

Though it can present at any age, but the average age of diagnosing Duodenal Inversum is forty-six years with a male-to-female ratio of 4:1. The diagnosis is commonly made by radiological evaluation ordered to evaluate patients with abdominal pain [5-7]. The condition may be encountered, however, during surgery or at autopsy. Laparoscopy has also been suggested as a useful tool in diagnosing Duodenum Inversum. Hypotonic duodenography aids in its diagnosis [2].

Childress in his series of nine patients reported that lying on either side relieves the pain of Duodenum Inversum, but it was not seen in our patient [8]. Mild elevation of bilirubin has also been reported [8], but again it was not seen in our patient.

The treatment of patients with symptomatic Duodenum Inversum without obstruction is essentially conservative. Simple anti-ulcer protocols have demonstrated moderate success in patients with associated duodenitis [5,9,10]. Patients with complete duodenal obstruction require surgery [3]. In most cases, the obstruction is due to fibrotic bands that are similar to Ladd's bands [6,7]. More extensive techniques to "straighten" the duodenum are not recommended.

The use of prokinetic agents for the treatment of Duodenum Inversum has not been reported previously in literature. We prescribed Cinitapride as the patient was having features of delayed gastric emptying without complete duodenal obstruction, and it produced excellent results. The rationale for the use of Cinitapride was that it would increase the motility of duodenum and improve the duodenal stasis and thus result in symptomatic relief. This case demonstrates that duodenal stasis of Duodenal Inversum responds well to prokinetic agents, however, generalization on the basis of a single case report cannot be done.

CONCLUSION

Duodenum Inversum is a rare congenital anomaly and responds well to conservative measures in the absence of complete obstruction. Prokinetic agents produce good results in duodenum inversum with features of delayed gastric emptying.

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