Online Case Report

Annular pancreas – a rare cause of gastric obstruction in an 82-year-old patient

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Annular pancreas is an uncommon and rarely reported congenital anomaly and thus is rarely suspected. A case is reported of an 82-year-old patient who presented with a 3-month history of nausea and vomiting associated with weight loss who at laparotomy was found to have an annular pancreas.

Key words: Annular pancreas – Gastric obstruction

Annular pancreas is an uncommon and rarely reported congenital anomaly and thus is rarely suspected. The pancreas is normally formed from the fusion of the dorsal and ventral pancreatic buds between the first 4–8 weeks of embryonic life. Annular pancreas is formed due to failure of the ventral bud to rotate and elongates to encircle the early part of the duodenum. It is one of the few medical conditions which can present itself in a wide range of clinical severities and can affect neonates to the elderly, thereby making the diagnosis difficult.

A case is reported of an 82-year-old patient who presented with a 3-month history of nausea and vomiting associated with weight loss who at laparotomy was found to have an annular pancreas.

Case report

An 82-year-old lady admitted under the care of the elderly physicians for investigation of a 3-month history of nausea and vomiting, associated with occasional mild epigastric pain. This was associated with weight loss of over a stone during the subsequent period. There was no associated haematemesis or jaundice. Previous medical history included hypertension and osteo-arthritis.

On examination, she appeared cachectic and dehydrated. Her abdomen was soft with minimal tenderness in the epigastrium and all her blood parameters were within normal limits. A barium meal was suggestive of a gastric outflow obstruction. Oesophagogastroduodenoscopy (OGD) revealed post-bulbar stenosis and food residue was noted, suggestive of gastric outlet obstruction. Brushings taken at this time returned no malignant cells. In accordance with local hospital policy, triple therapy for *Helicobacter pylori* was given. An abdominal CT scan confirmed duodenal obstruction at the level of D1 to D2 with no extrinsic lesion noted (**Fig. 1**). At laparotomy, the findings were of a gastric outlet obstruction secondary to an annular pancreas (**Fig. 2**). The pylorus was normal and there was no evidence of ulceration. A gastrojejunostomy was performed. The patient made an uneventful recovery and was duly discharged 18 days later. She remains well, suffering no ill effects.

Discussion

Annular pancreas is a rare congenital anomaly affecting approximately 1 in 20,000 live births affecting males more commonly than females.¹ Normally, the pancreas

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Figure 1 CT scan image.

Figure 2 Intra-operative photograph showing an annular ring of pancreatic tissue around the duodenum.

develops from the fusion of the ventral and dorsal pancreatic buds. The duodenum usually surrounds the pancreatic head; however, this situation is reversed in annular pancreas where the pancreas encircles the duodenum. Several hypotheses as to the pathophysiology of this condition exist; the most common ones include Lecco's theory² from the 1900s and Baldwin from many years later. Lecco suggested the adherence of the ventral bud to the duodenal wall results in a ring of tissue encircling the duodenum during dorsal rotation. Furthermore, Baldwin postulated that this condition arose from abnormal migration of the ventral pancreatic bud around the duodenum.² The regions of the duodenum which are usually affected are D2 in 74% of cases and D1 and D3 in 21%.³ It has been associated with other congenital anomalies namely Downs syndrome, tracheoesophageal fistula, intestinal atresia, pancreas divisum, and pancreatobiliary malrotation.⁴ Annular pancreas can present very early in life in some cases whereas others reveal themselves very much later in elderly life. It is thought that conditions such as recurrent pancreatitis, duodenal or gastric ulceration, pancreatolithiasis and pancreatic carcinoma cause the pancreatic ring to enlarge thereby obstructing the duodenal lumen.

Annular pancreas is responsible for up to 1% of GI obstructions.⁵ The diagnosis can be difficult as signs and symptoms can mimic other upper GI conditions which include peptic ulcer disease, pancreatitis, pancreatic or gastric malignancy. In the new-born, one often considers common causes of duodenal obstruction including duodenal atresia, congenital diaphragm, duplications and paraduodenal hernias.

The diagnosis can be made with a simple radiograph, which can classically shows a 'double bubble'. This is, however, present in other upper GI anomalies and, furthermore, is not present in all cases. A barium enema is useful to confirm gastric outlet obstruction and an OGD confirms this as well as ruling out other common causes such as PUD and malignancy. A CT scan may be useful but, as in our case, can not make the diagnosis. However, in over 40% of cases, the diagnosis is only made at laparotomy.⁶

The definitive management of annular pancreas is surgical. It is generally accepted that the annular ring of pancreatic tissue should not be dissected out; this can be extremely difficult as the pancreatic tissue can lie intramurally with no dissection plane. Furthermore, there have been a number of reports of significant variations in the duct system of the annular portion. Complications associated with resection of the annulus include pancreatic fistula, and erosion of the pancreatic tissue into

the duodenal wall which will result in opening of the duodenum. The surgical procedure of choice is a gastroenteral bypass.

As with the present case, the most common presenting features of annular pancreas are upper GI symptoms such as nausea, vomiting, and epigastric pain.⁷ The unusual feature in our case was that this was an elderly patient and a diagnosis of a gastric malignancy or ulceration or a duodenal malignancy was more plausible. This is the only reported case of annular pancreas presenting with gastric outlet obstruction in a patient in her eighth decade. The only other case in this age group found in the literature is of a 90-year-old man who presented with obstructive jaundice.⁸ Furthermore, with hindsight, the diagnosis could have been made pre-operatively with better planning of surgery, although the procedure would have been the same.

Conclusions

A diagnosis of annular pancreas should be kept in mind even in elderly patients, as this condition is not confined to the new-born. Early surgical intervention with bypass surgery is recommended.

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