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A RARE CASE OF A 27-YEAR-OLD FEMALE PRESENTED WITH DUODENAL OBSTRUCTION DUE TO ANNULAR PANCREAS

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Background. Annular pancreas is a rare congenital abnormality characterized by a ring of pancreatic tissue surrounding the descending portion of the duodenum. It is thought to originate from the incomplete rotation of the ventral pancreatic bud.

Objective. To present a case description of a 27-year-old female with duodenal obstruction due to annular pancreas Material and methods. The clinical manifestations, laboratory and instrumental findings of a female patient.

Results. We report the case of a 27-year-old female with 3 months history of upper abdominal pain, nausea, postprandial fullness, and recurrent vomiting. Physical examination revealed nothing except for the thin-built body. Routine biochemical and hematological investigations were within normal limits. The patient's standing direct abdominal graphy revealed air-fluid level and dilated both stomach and the first part of duodenum. Upper gastrointestinal series showed circumferential extrinsic compression on the 2nd portion of the duodenum. Abdominal computerized tomography (CT) and ultrasonography (USG) revealed a ring of pancreatic tissue encircling the second part of the duodenum. We present the clinical presentation, treatment plan which is performed through a duodenojejunostomy bypass procedure, and follow-up of the patient.

Conclusions. Annular pancreas is associated with duodenal atresia. It usually appears in infancy but might become clinically evident in adulthood with obstruction of the duodenum. The symptoms include constipation, nausea, and vomiting. and usually arise due to obstruction to gastric emptying. In order to confirm the presence of annular pancreas, abdominal CT scans with high resolution and angiography protocols as well as magnetic resonance imaging are helpful.

Keywords: *Annular pancreas, duodenal obstruction, congenital abnormality, duodenojejunostomy.*

РЕДКИЙ СЛУЧАЙ НЕПРОХОДИМОСТИ ДВЕНАДЦАТИПЕРСТНОЙ КИШКИ ИЗ-ЗА КОЛЬЦЕВИДНОЙ ПОДЖЕЛУДОЧНОЙ ЖЕЛЕЗЫ

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Введение. Кольцевидная (аннулярная) поджелудочная железа — редкая врожденная аномалия, характеризующаяся кольцом ткани поджелудочной железы, окружающим нисходящую часть двенадцатиперстной кишки. Считается, что это происходит из-за неполного вращения вентрального зачатка поджелудочной железы.

Цель исследования. Представить описание случая 27-летней женщины с дуоденальной непроходимостью вследствие кольцевидной поджелудочной железы.

Материал и методы. Анализ клинических проявлений, лабораторных и инструментальных данных у пациентки.

Результаты. Мы сообщаем о случае у 27-летней женщины с трехмесячным анамнезом болезни в виде болей в верхней части живота, тошноты, постпрандиального переполнения и периодической рвоты. Физикальное обследование не выявило ничего, кроме худощавого телосложения. Рутинные биохимические и гематологические исследования были в пределах нормы. Прямая абдоминальная графия у пациента в положении стоя выявила воздушно-жидкостный уровень и расширение желудка и начального отдела двенадцатиперстной кишки. Рентгенография верхних отделов желудочно-кишечного тракта показала внешнее сжатие по окружности 2-й порции двенадцатиперстной кишки. Компьютерная томография (КТ) и ультразвуковое исследование (УЗИ) брюшной полости выявили кольцо ткани поджелудочной железы, окружающее вторую часть двенадцатиперстной кишки. В статье представлены клиническая картина, план лечения, который включает шунтирование кольцевидной поджелудочной железы с помощью дуоденоеюностомии, и последующее наблюдение за пациентом.

Выводы. Кольцевидная поджелудочная железа связана с атрезией двенадцатиперстной кишки. Обычно заболевание проявляется в младенчестве, но может стать клинически очевидным во взрослом возрасте при непроходимости двенадцатиперстной кишки. Симптомы включают запор, тошноту, рвоту и обычно

возникают из-за затруднения опорожнения желудка. Для подтверждения наличия кольцевидной поджелудочной железы используют КТ брюшной полости с высоким разрешением и протоколы ангиографии, а также магнитно-резонансную томографию.

Ключевые слова: *кольцевая поджелудочная железа, дуоденальная непроходимость, врожденная аномалия, дуоденоеюностомия.*

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Introduction

The annular pancreas is a rare congenital anomaly in which the second part of the duodenum is surrounded by pancreatic tissue continuous with the head of the pancreas. The pancreas can constrict the duodenum and block the flow of food to the rest of the intestines [1, 2].

Radiographically, in newborns, the double-bubble phenomenon is seen in most cases. However, in adult USG, CT, MRCP (magnetic resonance cholangio-pancreaticography) or ERCP (endoscopic retrograde cholangio-pancreaticography) and UGI (upper gastrointestinal) series can be performed for diagnosis [3,4].

It rarely presents in adults. Literature has described a variety of clinical conditions, including pancreatic divisum, pancreatic neoplasm, pancreatitis, obstructive jaundice, duodenal obstruction, and peptic ulcer disease.

Case presentation

A 27-year-old female presented with 3 months history of upper abdominal pain, nausea, postprandial fullness, and recurrent vomiting. The episodes of vomiting used to occur postprandially. Vomiting was bilious and nonprojectile. All symptoms progressed during the last years. There was no history of hematemesis and melena.

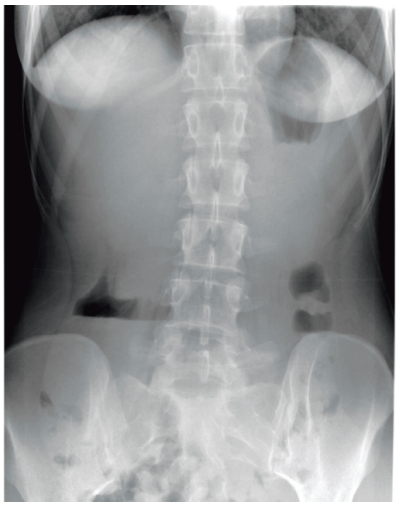
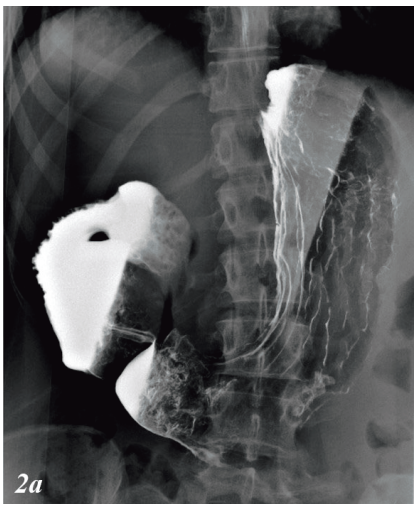


Figure 1. *– The patient's standing direct abdominal graphy reveals air-fluid level and dilated both stomach and first part of duodenum*
Рисунок 1. *– Прямая абдоминальная рентгенография пациента в положении стоя показывает уровень жидкости и воздуха, а также расширение желудка и первой части 12-перстной кишки*

The abdomen was soft without any palpable mass. Physical examination revealed nothing except for the thin-built body Biochemical and hematological tests were within normal limits.



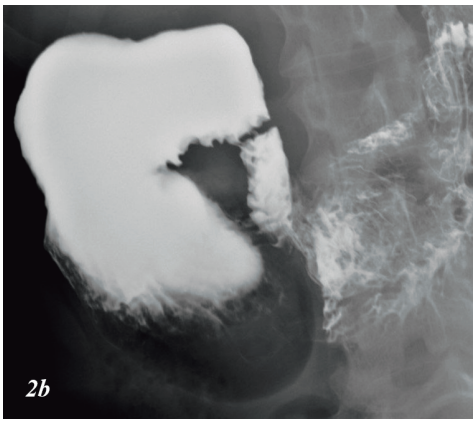


Figure 2a and 2b. *– Upper gastrointestinal series show circumferential extrinsic compression on the 2nd portion of duodenum*
Рисунки 2а и 2b. *– Серия снимков верхних отделов желудочно-кишечного тракта показывает циркулярное внешнее сжатие 12-перстной кишки*

The patient's standing direct abdominal graphy revealed air-fluid level and dilated both stomach and the first part of the duodenum (Figure 1).

Upper gastrointestinal endoscopy was performed and revealed dilatation of the first part of the duodenum and narrowed second part of duodenum with some extrinsic compression. The upper gastrointestinal series showed circumferential extrinsic compression on the 2nd portion of the duodenum (Figures 2a and 2b).

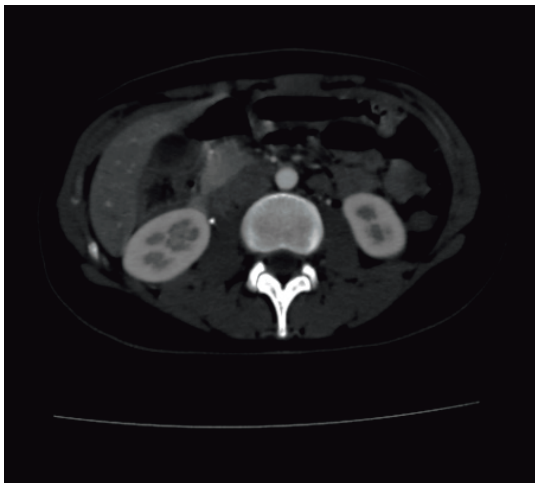


Figure 3. *– Abdominal CT shows a distended stomach with an air-fluid level and dilated the first part of the duodenum without an apparent transition*
Рисунок 3. *– КТ брюшной полости показывает растянутый желудок с воздушно-жидкостным уровнем и расширенную первую часть 12-перстной кишки без видимого перехода*

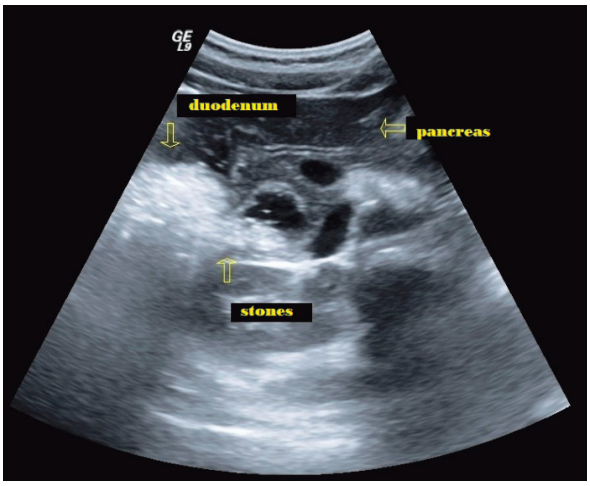


Figure 4. *– Abdominal US demonstrates a ring of pancreatic tissue encircling the second part of the duodenum*
Рисунок 4. *– УЗИ брюшной полости демонстрирует кольцо ткани поджелудочной железы, окружающее вторую часть 12-перстной кишки*

Abdominal CT shows a distended stomach with an air-fluid level and dilated the first part of the duodenum without an apparent transition (Figure 3). There was no mural or intraluminal pathology in the duodenum to suggest underlying tumor. Abdominal US demonstrates a ring of pancreatic tissue encircling the second part of the duodenum (Figure 4).

A biopsy was performed, and it was negative for malignancy. Based on radiological findings, laparotomy was performed which showed a rim of pancreatic tissue encircling the whole circumference of the second part of the duodenum causing partial obstruction confirming the diagnosis of annular pancreas (Figure 5).

Side to side duodenojejunostomy was performed. Patient became asymptomatic after surgery and gained weight with better food tolerance.

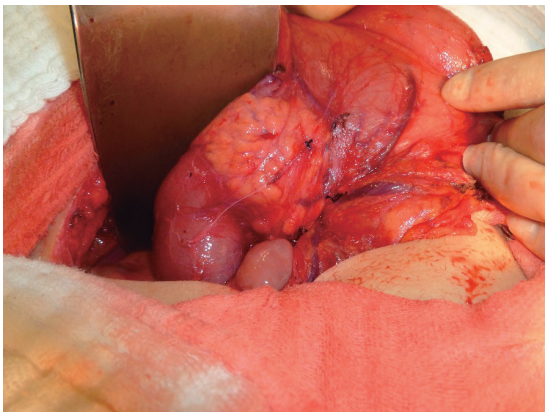


Figure 5. *– During operation, surgeons demonstrate annular pancreas which ring of pancreatic tissue encircles circumferentially the descending duodenum completely*
Рисунок 5. *– Во время операции хирурги демонстрируют кольцевидную поджелудочную железу, кольцо ткани поджелудочной железы полностью окружает нисходящую 12-перстную кишку по окружности*

Discussion

Annular pancreas is a rare congenital anomaly that in 1818 Tiedermann has firstly reported and in 1862 Ecker has named it as an annular pancreas [5,6]. Normally pancreas develops from one dorsal and two ventral buds that first appear as evaginations of the primitive foregut at around the 5th week of gestation [7].

Normally annular pancreas can result in abdominal pain, nausea, and vomiting at any age group [8]. But a case of annular pancreas causing upper gastrointestinal bleeding has been reported recently [9].

The condition is associated with other congenital anomalies in adults, such as duodenal webs, malrotations, and Schatzki rings. In an adult patient, Cheng et al. reported a case of annular pancreas with pancreaticobiliary maljunction presenting with symptoms [10]. Maker et al., some of the patients who presented with gastric outlet obstruction had coexisting peptic ulcer disease (PUD) [11]. They mentioned a classification system in the Canadian surgical literature in the 1970s with extramural (type 1) annular pancreas causing symptoms of gastric outlet obstruction, and intramural ring (type 2) related to PUD.

Another review by Zheng et al. suggests that although the annular pancreas can completely encircle the duodenum in adults, gastric contents can usually pass through the duodenum without any difficulty. However, ulceration can obstruct as a result of compression from the annulus to the duodenum due to chronic pancreatitis. The obstruction in these cases was above or at the papilla of Vater, which prevents alkaline secretions from the bile duct and pancreas from passing into the duodenum. However, patients without duodenal

stenosis or with stenosis below the papilla do not suffer from ulcers [12].

A number of case reports have documented neoplasia and adenocarcinoma arising in the setting of annular pancreas [13].

Preoperative diagnosis can be difficult. Imaging is of paramount importance to reveal the correct diagnosis. The diagnostic procedures include abdominal ERCP, MRCP, X-ray, ultrasound, CT scan, UGI and small bowel series. On CT imaging, the 2nd part of the duodenum is seen completely or incompletely surrounded by pancreatic tissue. The proximal duodenum may also be dilated and narrowed by the condition. Annular duct usually joins the main pancreatic duct or accessory duct (duct of Santorini). Over 40% of cases require laparotomy for diagnosis [14].

The main treatment is duodenoduodenostomy. Treatment usually is bypassing the obstructed segment of the duodenum by duodenoduodenostomy. Another approach is laparoscopic gastrojejunostomy [15].

Conclusions

To summarize, annular pancreas often presents itself in the first year of life but rarely present clinically with duodenal obstruction in adults as in our case. USG, CT, ERCP, MRCP, UGI series are the imaging methods used for diagnosis. But still, surgery remains necessary to confirm the diagnosis [12-17]. Duodenojejunostomy is an effective treatment for this pathology.

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