CASE REPORT

The vanishing duodenal polyp: mesenteric invagination presenting as duodenal pseudopolyp

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SUMMARY

Duodenal polypoid masses are an uncommon finding mainly diagnosed incidentally at endoscopy or surgery. We report a 39-year-old female patient with symptoms of intermittent stabbing pain in the upper right abdominal quadrant and an iron deficiency anaemia, without complaints of weight loss, haematemesis or melaena. A duodenal polyp and acute duodenitis have been described during endoscopic examinations and CT and ultrasound. Surgical excision of the polyp was advised. Intraoperatively, an elongated duodenum was remarkable; however, at duodenotomy, no polyp was found, nor during intraoperative endoscopy. Looking back at the endoscopy and imaging results, it was noted that the polyp varied in size and location. It was therefore concluded that we dealt with the pseudopolyp phenomenon, caused by invagination of the duodenal wall and its mesentery into the duodenum, presenting as a lipomatous pseudopolyp. Telescopic invagination of the duodenal wall was facilitated by the elongated hypermobile duodenum.

BACKGROUND

This case is, to our knowledge, the first report of mesenteric invagination in the duodenum in an adult presenting with recurrent upper abdominal pain.

CASE PRESENTATION

A 39-year-old woman consulted her general practitioner with signs of anaemia and symptoms of intermittent stabbing pain in the upper right abdominal quadrant. Abdominal examination revealed only tenderness of the upper right abdominal quadrant. A blood test showed iron deficiency anaemia (haemoglobin 5.1 g/dL) in the absence of complaints of weight loss, haematemesis or melaena. She had no risk factors for gastrointestinal pathologies other than a sliding diaphragmatic hernia and a mother who was diagnosed with pancreatic cancer at the age of 52. She reported, however, that already in 2011, an asymptomatic polypoid mass (figure 1a) in the duodenal bulb (D1) was noted as incidental finding during routine upper gastrointestinal endoscopy before bariatric surgery, which the patient eventually decided not to undergo.

INVESTIGATIONS

Following blood transfusion, endoscopy showed again a possibly pedunculated ulcerating duodenal

lipoma-like mass (figure 1b) in the proximity of the major duodenal papilla (D2), which could have caused the gastrointestinal bleeding. Furthermore, the conspicuous presence of enlarged Brunner's glands in the proximal part of the duodenum (D1) was reported, which led to the differential diagnosis of a giant Brunneroma, a benign, proliferative lesion arising from Brunner's glands of the duodenum.^{1–4} Biopsy of the polyp showed signs of gastric metaplasia and active duodenitis. The patient was *Helicobacter pylori* negative. Abdominal ultrasound revealed an inhomogeneous mass of 6.2 cm in the region of the major duodenal papilla (D2). CT scan was performed 1 day later, showing a lesion with imaging features suggestive of duodenal lipoma measuring 4.3×2.8 cm in the pars inferior of the duodenum (D3) with invagination of the proximal part of the duodenum (figure 2). Surgery was planned for duodenotomy and excision of the lesion, and took place 1 month after the CT.

DIFFERENTIAL DIAGNOSIS

Duodenal polypoid masses are an uncommon finding mainly diagnosed incidentally at endoscopy or surgery, as they are most often asymptomatic.^{5,6} The differential diagnosis consists of various benign causes such as adenomatous polyps, oedema around an ulcer, gastric mucosal prolapse, varices, hypertrophy of Brunner's glands, intraluminal diverticula, angioma, lipoma, myoma, neuroma, partial congenital bands, blood clot, mucosal deformity in pancreatitis or an ectopic pancreas, and very rarely malignant causes can be found, such as a metastatic nodule or carcinoid.⁵ Our patient was initially diagnosed with a duodenal lipoma, which is a relatively rare benign tumour of the gastrointestinal tract that can cause gastrointestinal bleeding.⁶ Lipomas account for 4% of all benign gastrointestinal tumours and only 4% of these gastrointestinal lipomas are found in the duodenum, whereas the majority of these lipomas is found in the colon (64%).^{6,7}

TREATMENT

Intraoperatively, the duodenum was dissected free and mobilised. The duodenum was found to be elongated and mobile, however, with no signs of a mass lesion inside. A duodenotomy was made in D2 through which the lumen of the complete duodenum was explored without revealing a lesion. Additional intraoperative endoscopy confirmed the absence of a polyp; after which, the duodenum

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Figure 1 (a) Endoscopic appearance of a symptomless polypoid mass in the duodenal bulb (D1) in 2011. (b) Endoscopic appearance of a polypoidal mass arising from D2, demonstrating the ulcerated surface in 2014.

was closed and a duodenopexy was performed to prevent future invagination.

OUTCOME AND FOLLOW-UP

After an uneventful recovery, the patient was discharged 5 days after the operation. During follow-up at 3 months and 1 year after treatment, the complaints of abdominal pain had disappeared. Recurrent invagination of the patient's elongated and hypermobile duodenum seemed effectively prevented by the duodenopexy.

DISCUSSION

In this patient, a duodenal polyp was described during two endoscopic examinations in 2011 and 2014, respectively, and on CT and ultrasound in 2014. However, no polyp or mass could be identified during surgery nor during intraoperative endoscopy. Looking back at the endoscopy and imaging results, we can conclude that this polyp varied in size (4.3 to 6.2 cm) and

Figure 2 (a) Double oblique CT reconstruction of the abdomen, showing telescopic invagination of the proximal duodenum into the distal part due to invagination of the hypodense fat containing mesentery, indicated by the asterisk. The large white arrow indicates the insertion of the invaginated wall of the proximal duodenum. The hypodense lesion (*) of 4.5 cm was thought to be a lipoma of the duodenal wall. Note the hyperdense duodenal mucosa extending up to the lesion, indicated by the white arrow heads. At surgery, only mesenteric fat was found (no lipoma). (b) Cartoon of the presumed invagination process. The white arrow indicates the insertion of the invaginated wall of the proximal duodenum that followed its fat containing mesentery into the distal duodenum, thereby creating the 'pseudopolyp' mass (*) consisting of mesentery. Years of peristaltic pulling on the pseudopolyp is thought to have caused the extensively shirred appearance of the duodenum. The dashed arrow indicates the direction of the duodenal content towards the jejunum. B, duodenal bulb; D, diaphragm; G, gall bladder; L, liver; P, pancreas; W, body wall.

location, from D1 to D3. Therefore, we suspect that we were dealing with the 'pseudopolyp phenomenon'. An online search in PubMed for 'duodenal pseudopolyp' generated only two reports concerning this topic. In 1975, Nelson *et al*⁵ already described a series of patients that had undergone negative duodenal exploration after at least two positive radiological upper gastrointestinal examinations showing a persistent roentgenographic contour defect at the superior flexure of the duodenum and prominent mucosal folds in the duodenal bulb at duodenoscopy. In 2005, Lyburn *et al* also presented a case of a duodenal pseudopolyp as shown on a double-contrast study; after which, gastrointestinal endoscopy showed no polyp or endoscopic inflammation.⁸

Reinterpretation of the CT scan of our patient showed telescopic invagination of the proximal duodenum into the distal

part of the duodenum and a lipomatous lesion in the duodenum of 4.3×2.8 cm. The pancreas and stomach were not invaginated. Invagination of the small bowel has been described as an infrequent complication in adults with Peutz-Jeghers syndrome, but our patient showed no signs of this autosomal dominant syndrome.^{9 10} Quelquejey and Adamsbaum described in 2003 a case of a 7-month-old child that showed invagination of the lymphadenopathic mesentery following gastrointestinal inflammation.¹¹ Staatz *et al* concluded already in 1998 that mesenteric lymphadenitis should be seen as the most common lead point in invagination.¹² Our patient suffered from chronic duodenitis which was confirmed by the biopsies during endoscopy. This chronic gastrointestinal inflammation possibly has caused a mesenteric lymphadenopathy that acted as a lead point for her invagination. The anaemia can be explained by silent gastrointestinal haemorrhages due to the chronic duodenitis or bleeding from a mucosal fold at invagination.

In conclusion, two different causes may have led to the appearance of a pseudopolyp on both endoscopies, ultrasound and CT. First, the elongated hypermobile duodenum of this patient caused prominent mucosal folds and facilitated the telescopic invagination of the proximal duodenum into the distal part of the duodenum. Second, invagination of the mesentery into the duodenum presented as a lipomatous pseudopolyp on CT. This case is, to our knowledge, the first report of mesenteric invagination in the duodenum of an adult presenting with recurrent upper abdominal pain.

Learning points

- Invagination of the lymphadenopathic mesentery into the duodenum is a rare condition in adults.
- It is an unusual cause of intermittent upper abdominal pain.
- Telescopic invagination of the duodenum may present as a vanishing duodenal polyp.
- An elongated hypermobile duodenum and duodenitis may predispose for this condition.

Contributors BSdeB, Medical student, present during surgery, did the conception and study design, data collection, thorough analysis and interpretation of data, literature search, figure preparation (figures 1 and 2), manuscript writing and final approval. SSKSP, MD, responsible radiologist, did the reporting of clinical findings,

data collection, figure preparation (figure 2a), manuscript writing and final approval. MK, MD, responsible gastroenterologist in first hospital, did the reporting of clinical findings, interpretation of data, critical revision of the manuscript and final approval. SAE, MD, responsible gastroenterologist in first hospital, did the reporting of clinical findings, figure preparation (figure 1), critical revision of the manuscript and final approval. MEG, MD, responsible gastroenterologist in second hospital, did the reporting of clinical findings, interpretation of duodenoscopy data, critical revision of the manuscript and final approval. CIJP, MD PhD, responsible gastroenterologist in second hospital, did the reporting of clinical findings, interpretation of duodenoscopy data, critical revision of the manuscript and final approval. HMdeB, MD, second opinion radiologist, did the interpretation of radiological data, critical revision of the manuscript and final approval. Professor TMvG, responsible surgeon in second hospital, did the reporting of clinical findings, conception and study design, manuscript writing and final approval.

Competing interests None declared.

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