CASE REPORT

Refractory coeliac disease: or is it?

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SUMMARY

A previously healthy 33-year-old man presented with a 3-month history of nausea, anorexia and weight loss. Coeliac disease was diagnosed at another hospital with positive serology and D2 biopsies and he was started on a gluten-free diet. The details of these tests were not available to us. Despite good adherence to a gluten-free diet, he continued to lose weight and became anaemic. A repeat gastroscopy showed D2 ulcers. *Helicobacter pylori* infection was excluded, coeliac serology remained negative but D2 biopsies showed partial duodenal villous flattening with intraepithelial lymphocytosis. Type 1 refractory coeliac disease was diagnosed. Prednisolone and azathioprine were commenced but the vomiting and weight loss progressed. A subsequent gastroscopy and CT scan revealed a D3 stricture and duodenal dilatation, respectively, in keeping with superior mesenteric artery syndrome. An infracolic duodenojejunostomy was performed and immunosuppression stopped. Subsequently, all his symptoms resolved and he remains well on a gluten-free diet.

BACKGROUND

Coeliac disease is an autoimmune small bowel disorder caused by an immune reaction to gluten (a protein found in wheat, barley and rye)¹. Exposure to gluten results in immune-mediated intestinal mucosal distortion like villous flattening with consequent malabsorption manifesting as diarrhoea, bloating and weight loss. However, it is important to recognise that not all villous flattening is coeliac disease, particularly seronegative villous flattening².

Superior mesenteric artery (SMA) syndrome is a rare gastrovascular disorder where the final part of the duodenum is compressed between the aorta and SMA. The syndrome occurs when the angle between the abdominal aorta and the SMA reduces from 38°–56° to 6°–25°.³ The angle is reduced by any process whereby the protective retroperitoneal fat becomes depleted such as in malabsorption, starvation and other catabolic states. Anatomical predispositions include a low origin of the SMA, intestinal rotation around the artery, a high insertion of the duodenum and an aesthenic physique⁴. The condition is often overlooked and usually only considered after other malabsorptive and inflammatory intestinal conditions have been excluded.

This is the first case that we are aware of which describes weight loss due to coeliac disease resulting in SMA syndrome. The distal duodenal obstruction caused by the latter results in proximal stasis with macroscopic and microscopic features mimicking coeliac disease. As many clinicians are unaware

of this syndrome, patients may be misdiagnosed and thereby exposed to potentially dangerous medication.

CASE PRESENTATION

A previously healthy 33-year-old Caucasian man presented with a 3-month history of worsening vomiting, early satiety, foul stools and abdominal discomfort. Examination, including body mass index (BMI) was unremarkable. Initial investigations revealed an iron deficiency anaemia (haemoglobin 98 g/dL, mean cell volume 74.6 fL, ferritin 3 µg/L). His initial coeliac antibody screen, on a self-administered gluten restricted diet, was negative for IgA and IgG gliadin antibodies, endomysial antibodies, tissue transglutaminase antibodies and reticulin antibodies. Human leucocyte antigen (HLA) serotyping revealed him to be HLA-DQ2 positive but HLA-DQ8 negative with a normal IgA level. D2 biopsy revealed typical features of coeliac disease: Marsh type 3 with villous flattening and intraepithelial lymphocytosis (figure 1). The images shown are the second set of biopsies taken at our hospital and not those at diagnosis which were taken elsewhere and not available to us. They show partly treated coeliac disease with signs of stasis from SMA occlusion.

INVESTIGATIONS AND DIFFERENTIAL DIAGNOSIS

Figure 2 shows the gastroscopy image of severe D2 inflammation and ulceration. Biopsies performed elsewhere revealed partial villous flattening and intraepithelial lymphocytosis with normal T-cell subsets (CD3(+)/CD4(-)/CD8(+)), suggestive of type 1 refractory coeliac disease. This was diagnosed elsewhere and the histology is from our follow-up biopsies and not the initial ones. Gastric biopsies showed reactive gastritis with superficial ulceration and no *Helicobacter pylori* infection. Serum gastrin level (shortly after starting a proton pump inhibitor) was normal. A positron emission tomography scan showed no increased uptake in the gastrointestinal tract to suggest lymphoma. His adherence to the gluten-free diet was again confirmed. Prednisolone and azathioprine were commenced elsewhere as treatment for presumed type 1 refractory coeliac disease.

Over the next months, he continued to lose weight (from 80 kg to 58 kg; from BMI 23.9 to 17.3) due to a reduced food intake from early satiety and vomiting. He was admitted to hospital for parenteral nutrition and further investigations. Two subsequent gastroscopies showed a progressively dilated stomach, pangastritis, superficial duodenal

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Figure 1 (A and B) Follow-up biopsies at our hospital. Low-power and medium-power photomicrographs on D2 biopsy showing partial villous flattening with mild crypt hyperplasia, a patchy mild increase in chronic inflammatory cells and mild lymphatic dilatation. There is patchy gastric metaplasia but no intraepithelial lymphocytosis.

ulceration and the suggestion of a smooth stricture in the distal duodenum. A single-balloon enteroscopy showed an ulcerated impassable benign appearing D3 stricture. Distal duodenal and D2 biopsies showed unchanged persistent features as before.

A CT scan with contrast ([figure 3](#)) revealed a smooth stricture at D3 with no intramural abnormality or extrinsic compression. The proximal duodenum and stomach were significantly dilated.

Figure 2 Duodenal (D2) ulceration and inflammation.

Figure 3 CT scan showing duodenal (D3) stricture.

A barium contrast study ([figure 4](#)) confirmed a distal duodenal stricture (arrowed), and a diagnosis of SMA syndrome was made.

DIFFERENTIAL DIAGNOSES

- ▶ Type 1 refractory coeliac disease.
- ▶ Stricture due to enteropathy-associated T-cell lymphoma.
- ▶ Duodenitis with peptic stricture.

TREATMENT

A laparotomy, duodenal exploration and an infracolic duodeno-jejunostomy was performed. He made an uneventful recovery. The prednisolone and azathioprine were discontinued. He continued the gluten-free diet and had no further symptoms. His weight increased to 76 kg (BMI 22.7) after 2 months.

OUTCOME AND FOLLOW-UP

A postsurgical gastroscopy was performed which showed a normal appearing stomach, and an atrophic-appearing duodenum but no ulceration. D2 biopsies showed mild intraepithelial lymphocytosis and complete reversal of villous flattening. As the initial diagnosis of coeliac disease was made elsewhere with the details unavailable to us, and the duodenal histology returned to normal

Figure 4 Barium swallow study showing duodenal (D3) stricture.

after surgery; it was possible that the histological findings were entirely due to SMA syndrome. We therefore confirmed the diagnosis of coeliac disease with a gluten challenge (two slices of white bread per day for 2 weeks) and repeat duodenal histology and serology, which showed positive antiendomysial antibodies (negative prechallenge) and an antitissue transglutaminase IgA titre of 27.6 U/mL (1.4 U/mL prechallenge; negative if <4 U/mL). D2 biopsies after the challenge showed increased intraepithelial lymphocytes (over 25 lymphocytes per 100 enterocytes) with elongated and hyperplastic crypts (Marsh type 2 lesions).

The patient remains well on a gluten-free diet with complete normalisation of blood tests and maintenance of weight at 78 kg (BMI 23.3).

DISCUSSION

SMA syndrome is an uncommon but distinct clinical condition mostly affecting women between the ages of 10 and 30⁵. There are three predisposing anatomical variants: (1) a sharp angle between the abdominal aorta and the SMA, (2) a short ligament of Treitz with fixation of the duodenum beneath the SMA, and (3) an aberrant SMA situated downwards and forwards. The main symptoms of SMA syndrome are early satiety, vomiting, abdominal discomfort/pain and bloating. As a self-perpetuating syndrome, delayed diagnosis can be fatal due to electrolyte disturbance or perforation⁶.

Typically, the condition occurs after significant weight loss and a reduction in the amount of retroperitoneal fat filling the angle between the abdominal aorta and SMA. However, a study found that only 50% of 22 children presenting with the condition had lost weight before diagnosis^{7,8}. The other 50% may be accounted for by the aforementioned anatomical anomalies. In this case, coeliac disease resulted in enough weight loss to close the aortomesenteric angle, and subsequent signs and symptoms were due to the consequential SMA syndrome. On review of the follow-up D2 histology, inflammation with ulceration would fit with stasis rather than refractory coeliac disease.

SMA syndrome is a rare condition which is often misdiagnosed. Histological findings in the proximal duodenum can mimic coeliac disease, or in this case refractory coeliac disease. This should therefore be added to the list of non-coeliac causes of duodenal villous flattening.⁹

Learning points

- ▶ Superior mesenteric artery syndrome is a rare condition and often misdiagnosed as symptoms can be non-specific.
- ▶ The most common risk factor for superior mesenteric artery syndrome is significant weight loss.
- ▶ Superior mesenteric artery syndrome should be suspected when endoscopy does not reveal an intrinsic cause for proximal small bowel obstructive symptoms.
- ▶ Although a conservative approach is possible, surgery is the treatment of the choice for superior mesenteric artery syndrome.

Contributors Chidi Amadi: sole author. Simon Anderson: supervisor and reviewer.

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REFERENCES

- 1 Lebwohl B, Ludvigsson J, Green P. Celiac disease and non-celiac gluten sensitivity. *BMJ* 2015;351:h4347.
- 2 Marsh M, Johnson M, Rostami K. Mucosal histopathology in celiac disease: a rebuttal of Oberhuber's sub-division of Marsh III. *Gastroenterol Hepatol Bed Bench* 2015;8:99–109.
- 3 Shetty A, Schmidt-Sommerfeld E, Haymon M, Udall J. Radiological case of the month. superior mesenteric artery syndrome. *Arch Pediatr Adolesc Med* 1999;153:303–4.
- 4 Lippl F, Hannig C, Weiss W, Allescher H, Classen M, Kurjak M. Superior mesenteric artery syndrome: diagnosis and treatment from the gastroenterologist's view. *J Gastroenterol* 2002;37:640–3.
- 5 Goin L, Wilk S. Intermittent arterioesophageal occlusion of the duodenum. *Radiology* 1956;67:729–37.
- 6 Lim J, Duke G, Eachempati S. Superior mesenteric artery syndrome presenting with acute massive gastric dilatation, gastric wall pneumatosis, and portal venous gas. *Surgery* 2003;134:840–3.
- 7 Hermosillo-Cornejo D, Girón-Gidi A, Vélez-Pérez F, Lemus-Ramírez R, Martínez-Garza P. Wilkie syndrome. *A Case Rep*. Facultad de Ciencias de la Salud, Universidad Panamericana, 2016.
- 8 Biank V, Werlin S. Superior mesenteric artery syndrome in children: a 20-year experience. *J Pediatr Gastroenterol Nutr* 2006;42:522–5.
- 9 Hines J, Gore R, Ballantyne G. Superior mesenteric artery syndrome. diagnostic criteria and therapeutic approaches. *Am J Surg* 1984;148:630–2.

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