CASE REPORTS

Diffuse vascular ectasia of the antrum, duodenum, and jejunum in a patient with nodular regenerative hyperplasia. Lack of response to portosystemic shunt or gastrectomy

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Abstract

The case is reported of a 70 year old man who presented with severe anaemia because of chronic gastrointestinal blood loss. This loss was ascribed to vascular ectasia resembling the gastric antral vascular ectasia syndrome but extended to include the antrum, the duodenum, the jejunum, and, possibly, the cardiac area. This condition was associated with portal hypertension as a result of nodular regenerative hyperplasia. Consecutive treatments including sucralfate, prostaglandin E₂, propranolol, organic nitrates, pentoxifylline, corticosteroids, endoscopic sclerotherapy, portosystemic shunt, total gastrectomy, proved ineffective.

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Gastric antral vascular ectasia is a rare cause of chronic gastrointestinal blood loss which was first described in 1953.¹ Since then, more than 60 cases have been reported but many of them in recent years have been diagnosed incorrectly because this lesion has been misinterpreted. This lesion consists of multiple flat red spots, measuring 1 to 5 mm in size, which are found very close together, often aggregated into red linear stripes converging on the pylorus, which resembles the stripes of a watermelon.^{2,3} Gastric antral vascular ectasia has often been seen in the elderly and in association with hepatic cirrhosis and achlorhydria. We report a case in association with nodular regenerative hyperplasia where vascular ectasia was found in the antrum, the duodenum, and the jejunum. The severity of the condition was shown by a severe blood loss which led to the use of different treatments such as propranolol, endoscopic sclerotherapy, portosystemic shunt, and total gastrectomy, none of which were successful.

Case report

A 70 year old white man was diagnosed as having a severe iron deficient anaemia in September 1988 (haemoglobin, 56 g/l; ferritin, 6 ng/ml (normal, >20 ng/ml)). An upper gastrointestinal endoscopy examination showed 'antral purpura'. Barium tests and colonoscopy examination on

the small bowel were normal. Coeliac and superior mesenteric angiography were also normal. Chromium tagged red cell studies showed gastrointestinal blood loss at a maximum rate of 204 ml/d. He was treated at first with blood transfusions, oral iron, antacids, and anti-histamine₂ receptors which was replaced, two months later, by enprostil (a prostaglandin E₂). In January 1989, he was referred to a haematology unit with persistent anaemia. The results of a bonemarrow biopsy were compatible with an iron deficient anaemia. Abdominal computed tomography showed splenomegaly. A liver biopsy was performed because the alkaline phosphatase concentration was raised and nodular regenerative hyperplasia was diagnosed. There was no further disorder found with the nodular regenerative hyperplasia.

In addition to the blood transfusions and iron supplementation, he was treated with sucralfate, propranolol, organic nitrates, and pentoxifylline during the following months. Anaemia persisted, however, and he was referred to our unit in July 1989. Examination showed him to be pale but other tests were normal. The serum vitamin B-12, folates, creatinine values were normal, as were coagulation tests. Gastric parietal cells, intrinsic factor, and other auto-antibodies were absent. Pentagastrin tests showed achlorhydria. Serum hormone values were: gastrin, 100 and 116 pg/ml (normal upper limit, 100); serotonin, 377 ng/ml (normal upper limit, 470); glucagon, 28 fmol/l (normal upper limit, 48); 5-hydroxyindole acetic acid, 6.44 mg/d (normal upper limit, 7). Upper gastrointestinal endoscopy showed diffuse, small (1 to 5 mm diameter) flat red cherry spots in the antrum (Fig 1) and in the duodenum. This pattern suggested gastric antral vascular ectasia. A similar pattern of red cherry spots was also seen in the cardiac area (Fig 2). Severe congestive gastropathy in the fundus and medium sized oesophageal varices were also seen. Antral and duodenal biopsies showed ectatic mucosal blood vessels (Fig 3).

The patient was discharged after a blood transfusion and given iron treatment. He presented with overt gastrointestinal blood loss in following months. Further upper gastrointestinal endoscopies showed oozing blood

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coming from the antrum or duodenum. We were able to see the progressive confluence of red spots into red stripes. Antrectomy was not attempted because the duodenum was affected by ectasia. We thought that portal hypertension could be a contributory factor to the ectasia and therefore a mesentericocaval shunt with a jugular graft was performed in October 1989. Portal venous blood pressure fell from 23 to 14 mm Hg during surgery. The gross appearances of the stomach, duodenum and jejunum were normal but the surface of the liver seemed nodular. Liver biopsy examination confirmed nodular regenerative hyperplasia (Fig 4) and transmural antral biopsy examination showed gastric antral vascular ectasia with the ectasia of some superficial vessels occluded by fibrin thrombi and fibromuscular hyperplasia of lamina propria (Fig 5).

The patient was discharged and remained well during the following two months. He then presented with melaena (haemoglobin, 47 g/l) and mild hepatic encephalopathy. Upper gastrointestinal endoscopy examination indicated oozing blood from duodenal ectasia. The shunt patency was found by Doppler ultrasound. Treatment with endoscopic sclerotherapy was

given using polidocanol (concentration 1%). This was repeated on seven occasions during the next two months. A total of 220 ml were injected into the duodenum, 180 ml into the antrum, and 12 ml into the cardiac area. In January 1990, anaemia still persisted with gastrointestinal blood loss varying from 43 to 248 ml/d. Upper gastrointestinal endoscopy examination showed the disappearance of red spots in the duodenum, and improved pattern in the antrum, and bleeding from severe congestive gastropathy in the fundus. Scanning showed the tagged red cell count to be normal and an attempt at jejunoscopy was unsuccessful.

The patient had a total gastrectomy with an omega intestinal loop anastomosis to keep the access clear to the duodenum. The patient was discharged and remained well for one month. He presented again with anaemia and blood loss of 94 to 278 ml/d. Haematological tests were normal. Jejunoscopy showed diffuse red spots on the first four examined intestinal loops. Treatment with corticosteroids was not beneficial. Changes in the liver function test were mild and remained stable throughout follow up. The patient died in June 1990 of cachexia and hepatic encephalopathy. More than 120 blood units had been transfused during the course of the disease.

Discussion

New aspects of gastric antral vascular ectasia syndrome were seen in this case. About half of the previous cases were associated with cirrhosis, either alcoholic or post-hepatic, and more recently with primary biliary cirrhosis.⁴ This is

Figure 1: Multiple diffuse flat red spots in the antrum.

Figure 2: Several red spots are present around the cardia.

Figure 3: Duodenal endoscopic biopsy shows that a vessel (arrowheads), just beneath the epithelium of a villus, is largely dilated (haematoxylin and eosin original magnification $\times 400$).

Figure 4: Surgical liver biopsy shows nodular regenerative hyperplasia. A nodule is outlined by condensation of the surrounding reticulin fibres (reticulin original magnification $\times 100$).

the first report of a case associated with nodular regenerative hyperplasia.

By definition, gastric antral vascular ectasia are only present in the antrum. Some brief descriptions of ectopic ectasia have been reported, however, in the cardiac area,^{5,6} gastric corpus,² duodenum,⁶⁻⁸ and perhaps in the colon.⁶ Most of these cases, however, have been reported in abstracts⁶ and no histological confirmation given. Recently, three patients with congestive gastroenteropathy were seen.⁹ Unfortunately, no histologic confirmation was obtained either in the stomach or in the duodenum. These endoscopic lesions were called congestive gastroenteropathy by analogy with congestive gastropathy. In fact, according to the photographs, we think they were vascular ectasia. More studies are needed, however, to establish whether gastric antral vascular ectasia

and severe congestive gastropathy are distinct entities or not.

In this case, ectasia were diffusely spread in the upper gastrointestinal tract. The classic endoscopic pattern of gastric antral vascular ectasia is watermelon stomach,⁴ but there is also the diffuse form^{10,11} which we have found to be more usual.¹² It is important to note that these were histologically confirmed in the antrum. In the duodenum, however, we only detected ectatic vessels. Biopsy examination was not performed in the cardiac area owing to the possible presence of submucosal varices. It must be emphasised, however, that these ectopic ectasia are probably rare or not clinically relevant. Indeed, in all the cases of gastric antral vascular ectasia where antrectomy was performed, anaemia disappeared on every occasion. By contrast, significant amounts of blood oozing from the duodenum was seen from the beginning in our patient, thus preventing us from performing antrectomy. Finally, total gastrectomy was not successful because of the amount of bleeding from the jejunum. Eventually, this patient died from the consequences of persistent severe bleeding from the jejunum.

The presence of ectopic lesions has several consequences. Firstly, complete upper gastrointestinal endoscopic examination should be performed when gastric antral vascular ectasia is present. and in particular the endoscope should be inserted as far as possible. Secondly, antrectomy is not recommended as several types of endoscopic treatment seem more effective.¹³⁻¹⁵

In this case, different treatments were given. Among drugs, the inefficacy of antacids and anti-histamine receptors has consistently been reported and this could have been expected from the achlorhydria often seen in gastric antral vascular ectasia.^{3,5} The lack of efficacy of sucralfate has recently been reported by several authors.¹⁴⁻¹⁶ We used corticosteroids as their efficacy was suggested in some studies.^{3,10,17} It was ineffective, however, in many studies^{8,11,14,18} as well as in our own. To our knowledge the use of prostaglandin E₂ or propranolol and pentoxifylline has not been reported. We used prostaglandin as it has been suggested that a defect in prostaglandin E₂ content in gastric mucosa has been found in patients with cirrhosis.¹⁹ Further studies have shown an increase in prostaglandin E₂ gastric mucosal content in gastric antral vascular ectasia.²⁰ By analogy with congestive gastropathy,^{21,22} we used propranolol but it proved to be ineffective. We used pentoxifylline as it has been suggested this drug could protect gastric mucosa by improving capillary circulation.²³ Recently, it has been suggested that a serotonin antagonist²⁴ and an oestrogen-progesterone preparation²⁵ could achieve a marked improvement. No drug has up to now proved to be effective in the correction of anaemia caused by gastric antral vascular ectasia apart from iron supplementation in some instances.

As portal hypertension could have been a common trigger factor of vascular ectasia in this case and in cirrhosis and as the spread of ectasia was diffuse, we performed a porto-systemic shunt. It was unsuccessful and it also

Figure 5: Antral surgical biopsy. The three elementary lesions of gastric antral vascular ectasia are seen in the lamina propria, fibrin thrombi (T), fibromuscular hyperplasia (FMH), and ectasia (E). These ectasia are not characteristic as they are located in a deep portion of lamina propria. Multiple superficial ectasia, however (as in Fig 4), were seen in other areas of this specimen or in endoscopic biopsy specimens taken before sclerotherapy has been performed (haematoxylin and eosin original magnification $\times 400$).

seemed to aggravate the process of ectasia. In 1975, Testard *et al* reported the same lack of efficacy of portocaval anastomosis in a case of gastric antral vascular ectasia.²⁶ These findings, however, cannot entirely rule out the part played by portal hypertension. Some authors argue that gastric antral vascular ectasia could be a result of vasoactive components, such as gastrin,² 5 hydroxytryptamine, and vasoactive intestinal polypeptide.²⁷ This could explain the occurrence of gastric antral vascular ectasia not only in cirrhosis, where increases in such hormones have been seen, but also in other conditions where hypergastrinaemia was reported. It should be noted that portocaval anastomosis might increase such substances²⁸ and, as a result, favour the development of vascular ectasia. A logical approach to the treatment of gastric antral vascular ectasia in portal hypertension would be to lower the level of portosystemic shunting and not the level of portal hypertension in itself. In the light of these findings and as a result of our experience, it seems that portocaval shunt should not be attempted in gastric antral vascular ectasia. The role of hypergastrinaemia should be reappraised as intestinal ectasia continued to aggravate after total gastrectomy in our case and new ectopic vascular ectasia were seen after partial gastrectomy in another case.⁷

We attempted to treat vascular ectasia by endoscopic sclerotherapy. Some improvement was subsequently seen on endoscopic examination both in the duodenum and in the antrum. The efficacy of this type of treatment has already been suggested.^{8,29} Although there was improvement, it seems to us that the fundic mucosa deteriorated after this treatment. This side effect has been seen by Petrini *et al* with the occurrence of bleeding from fundic congestive gastropathy after treatment of gastric antral vascular ectasia by heat probe.¹² Other groups have reported better results in gastric antral vascular ectasia using laser^{13,14} or heat probe.¹⁵

In conclusion, this case of vascular ectasia was characterised by unusual patterns: association with nodular regenerative hyperplasia; diffuse location of red spots in the antrum; duodenum, and jejunum; lack of efficacy of endoscopic sclerotherapy and surgical approaches. We should not forget, however, that vascular ectasia are generally found in the antrum and that local treatments seem highly effective.

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