Chronic abdominal pain

David R Parker, Sharon Evans, Jeremy G C Kingham

**Morriston Hospital,
Swansea, West
Glamorgan, UK
Department of
Gastroenterology**
DR Parker
JGC Kingham
**Department of
Radiology**
S Evans

Correspondence to DR
Parker, Consultant
Physician and
Gastroenterologist,
Weston General Hospital,
Weston-Super-Mare,
North Somerset
BS23 4TQ, UK

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A 55-year-old man presented with a two-year history of post-prandial epigastric pain and 10 kg weight loss. He smoked 20 cigarettes per day and suffered intermittent claudication. Physical examination revealed bilateral absence of dorsalis pedis and anterior tibial arterial pulsation. His symptoms continued for a further two years and his weight fell by a further 3 kg. Over this time he was extensively investigated by several surgeons and physicians. Blood count, urea and electrolytes, liver function, gastroscopy, endoscopic retrograde cholangiopancreatography, barium meal and follow-through, abdominal ultrasound scan, and barium enema were all normal. Twenty-eight months after presentation a diagnostic procedure was performed and curative treatment given. He has suffered no symptoms since and has regained 6 kg in weight.

Questions

- 1 What diagnostic procedure did he undergo and what did it reveal?
- 2 What was the diagnosis?
- 3 Which two treatments can be effective in this condition?
- 4 Name the noninvasive screening test of choice.

Figure 1 Digital subtraction angiogram (lateral view) showing occlusion of the coeliac axis (top arrow) and the superior mesenteric artery (middle arrow). Note the prominent inferior mesenteric artery (bottom arrow)

Answers

QUESTION 1

Mesenteric angiography was performed and revealed occlusion of the superior mesenteric artery and critical stenosis of the coeliac axis (figure 1).

QUESTION 2

The diagnosis was mesenteric angina.

QUESTION 3

In this case, the coeliac axis stenosis was successfully dilated by balloon angioplasty, but arterial bypass surgery can also be effective.

QUESTION 4

The screening test of choice is duplex Doppler ultrasound (figures 2 and 3).

Discussion

Intestinal angina results from chronic small intestinal ischaemia and cardinal symptoms are post-prandial pain and weight loss. It is not rare in populations with a high prevalence of atheroma; the elderly and smokers are particularly at risk. Conventional methods of intestinal tract investigation are unhelpful and the diagnosis can easily be overlooked. Delay in diagnosis is serious as potentially fatal intestinal infarction can occur.

Effective treatment exists in the form of angioplasty and bypass surgery.¹ The efficacy of these procedures is limited unless the diagnosis is made before mesenteric infarction. A simple noninvasive screening test would be useful in facilitating early diagnosis. Mesenteric angiography is the gold standard for imaging the intestinal vasculature, but it is not suitable as a screening investigation. Duplex Doppler ultrasound is a noninvasive method used widely to investigate regional blood flow in a variety of locations. Qamar and Read realised the potential of this method in imaging mesenteric vasculature² and over the past decade it has developed into an accurate and reliable diagnostic tool in cases

Figure 2 Graphic representation of Doppler wave-form parameters measured in both coeliac and superior mesenteric arteries. A = peak systolic velocity; B = end diastolic velocity

of suspected intestinal ischaemia. Each blood vessel has a characteristic Doppler wave form³ (figure 2), and patients with vascular stenosis may have wave form abnormalities – increased peak systolic velocity of flow, broadened systolic component and end diastolic velocity of flow (figure 3) – that indicate intestinal ischaemia. These abnormalities may be present in the fasting state or may be provoked by the haemodynamic stress of ingesting a meal.⁴ There is a close relationship between abnormalities of Doppler wave form and angiographic anomalies and as the equipment required for duplex Doppler investigations is relatively widely available, it is now recommended as a screening tool prior to angiography.⁴

Final diagnosis

Intestinal angina.

Keywords: intestinal angina, mesenteric angiography

Figure 3 Superior mesenteric artery waveforms as demonstrated by duplex Doppler ultrasound. (A) Normal fasting waveform; peak systolic velocity 114 cm/s, end diastolic velocity 18 cm/s; (B) abnormal fasting waveform; note increased peak systolic velocity (259 cm/s) and end diastolic velocity (60 cm/s) as well as broadening of the systolic component. This appearance is highly suggestive of vascular stenosis

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