Extrinsic duodenal obstruction and halitosis

Brian M. Stephenson and Brian I. Rees

Department of Surgery, University Hospital of Wales, Heath Park, Cardiff CF4 4XW, UK.

Summary: Two siblings with extrinsic duodenal obstruction caused by congenital peritoneal bands are reported. Attention is drawn to the unusual physical sign of halitosis as a presenting feature. It is suggested that this physical sign may be an indication for barium studies.

Introduction

Numerous causes of congenital duodenal obstruction are recognized,¹ the commonest being malrotation of the midgut. Here, peritoneal bands pass across from the colon to the duodenum, gallbladder, liver and kidney. These bands may themselves produce duodenal obstruction, but peritoneal band obstruction in the absence of malrotation is rare.

Cases of intestinal atresia, and small bowel volvulus, have been reported in siblings,^{2,3} but extrinsic duodenal obstruction has not. Herein we report such an occurrence, in two brothers, who both suffered from long-standing halitosis.

Case reports

Case 1

A 15 year old boy presented with a one day history of vomiting both blood and recognizable food, but not bile. On examination he was dehydrated, pale and thin. His abdomen was distended and a succussion splash was elicited. Plain X-rays demonstrated duodenal obstruction (Figure 1).

Since the age of 2½ he had had numerous admissions for epigastric pain and vomiting. At the age of 4 a barium meal had shown delay in gastric emptying and he had been diagnosed as having abdominal migraine.

One year prior to this admission he had been admitted with a large haematemesis. A gastroduodenoscopy had been normal and a further barium meal had confirmed the previously documented delay in gastric emptying (Figure 2). At that time, gastric acid studies revealed high levels of both 'basal' and 'peak acid' output;

Figure 1 Supine radiograph showing double bubble of duodenal obstruction.

14.2 mmol (normal: 0–4 mmol) and 72 mmol (normal: 8–40 mmol) respectively. He had thus been treated with high doses of histamine-2 antagonists and metoclopramide. His mother commented that he had always had bad breath. He had been a number of times to the dentist, who could find no cause for this.

On this admission a laparotomy was performed at which the duodenum was found to be extrinsically obstructed by peritoneal bands across the second and third parts. A large bore tube was passed to the duodenojejunal flexure to exclude

Figure 2 Note the presence of barium in the stomach at 2 hours and impression by peritoneal bands (arrows).

Figure 3 Lateral radiograph showing peritoneal band obstruction (arrows) causing proximal dilatation and delayed distal filling.

intrinsic obstruction by 'webs'. The peritoneal bands were divided and the duodenum mobilized throughout its length. There was no evidence of malrotation.

Case 2

The 12 year old brother of case 1 presented 2 weeks later with a 5-day history of vomiting and upper abdominal pain. This had occurred intermittently over the preceding 2 years and usually settled spontaneously. He too had a long history of halitosis, and though his dentist had reassured his mother that his teeth were normal, she had tried various mouthwashes, flavoured toothpastes and other remedies to combat this.

On examination he was dehydrated and tender in the epigastrium. His abdomen was not distended.

On admission his blood urea was 41 mmol/l and after resuscitation, he later underwent a barium meal examination. This showed similar extrinsic duodenal obstruction (Figure 3).

At operation peritoneal bands were divided and the duodenum mobilized as in case 1. Again, there was no evidence of malrotation or obstruction from 'webs'.

Discussion

Bad breath is usually a trivial complaint and it may be impossible to determine the cause of minor degrees of halitosis. It is an unusual but occasional complaint in normal children, except during acute infectious diseases (Vincent's angina, tonsillitis, infectious mononucleosis, diphtheria).

Chronic halitosis in both adults and children should not go unexplained. Extensive dental caries and periodontal disease are the commoner causes of oral sepsis. Halitosis of recent onset in an otherwise well child should arouse the suspicion of foreign body in the nose especially in mouth-breathers with or without unilateral nasal discharge. Occasionally acute respiratory tract infections may cause halitosis though more often it is a feature of chronic suppurative lung disease (lung abscess, bronchiectasis).

Bad breath has been associated with a variety of gastrointestinal disorders (oesophageal diverticula, lowered gastric acidity), but it is not generally considered an indication of bowel disease *per se*. There have been reports of gastric outlet obstruction in adults presenting with halitosis,⁴ where stasis results in bacterial overgrowth with fermentation of gastric contents, but this association has not been described in extrinsic duodenal obstruction. The aetiology of the halitosis in these cases is similar in that the obstruction caused enormous distension of the stomach with consequent retention of gastric contents.

Although helpful in making a clinical diagnosis,

the foetors of acute appendicitis, ketosis, uraemia and hepatic failure are rarely remarked upon by the patient. Very occasionally, halitosis may be a familial feature and this may have been what the mother suspected in the younger child, as during a follow up visit 4 months after the second child's operation she commented, with some surprise, that both boys had been relieved of their halitosis.

The high levels of acid secretion in case 1 are in the range seen in the Zollinger-Ellison syndrome, and have been described in cases of pyloric obstruction (possibly resulting from antral distension which causes gastrin release).⁵

Extrinsic duodenal obstruction is classically seen in infants and children with malrotation with or without volvulus. The duodenum is either obstructed by the abnormally rotated mid-gut twisting upon itself, or by peritoneal bands (Ladd's bands). Strangulation of volvulus of the mid-gut causes complete and persistent obstruction, though malrotation *per se* can cause symptoms at any age.^{6,7}

In the absence of malrotation, as in these cases, extrinsic compression by peritoneal bands alone is

rare, and though other congenital anomalies have been described in siblings,^{2,3} this is the first report of such an occurrence due to peritoneal bands.

Other causes of extrinsic obstruction include annular pancreas, hydronephrosis, renal and choledochal cysts or the superior mesenteric vessels.¹ Duodenal obstruction from these causes is usually incomplete and intermittent, presenting with vomiting which may or may not contain bile.

In chronic intermittent obstruction, barium studies will demonstrate a malrotation and determine the position of the duodenojejunal flexure. The normal flexure lies to the left of midline and if seen lying over the spine, or to the right, implies a degree of malrotation of the proximal loop of the mid-gut.⁷ In both cases the duodenal flexure was normally positioned. However, the barium studies did show diagnostic features in both brothers.

Chronic halitosis should not be dismissed, and we conclude that in vomiting children, the onset of halitosis should be an indication for a barium meal examination.

References

1. Wilkinson, A.H. Congenital causes of duodenal obstruction. *J R Coll Surg Edinb* 1973, **18**: 197–208.
2. Mishalany, H.G. & Najjar, F.H. Familial jejunal atresia: three cases in one family. *J Pediatr* 1968, **73**: 753–755.
3. Budd, J.S. & Powley, P.H. Small bowel volvulus in two siblings. *Br Med J* 1988, **296**: 1572.
4. Tydd, T.F. & Dyer, N.H. Pyloric stenosis presenting with halitosis. *Br Med J* 1974, **3**: 321.
5. Sircus, W. Consideration on the effect of obstruction on gastric secretion. In: Shnitka, T.K., Gilbert, J.A.L. & Harrison, R.C. (eds) *Gastric Secretion; Mechanism and Control*. Pergamon Press, New York, 1967, p. 293.
6. Brendan Devlin, H. Mid-gut malrotation causing intestinal obstruction in adult patients. *Ann R Coll Surg Engl* 1971, **48**: 227–237.
7. Balthazar, E.J. Intestinal malrotation in adults. *Am J Radiol* 1976, **126**: 358–367.