Case report

Meckel’s diverticulum — too often forgotten in adults?

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Accepted 10 August 1987.

Meckel’s diverticulum is the commonest congenital anomaly of the gastrointestinal tract, being present at 2% of autopsies.\(^1\) Approximately 4% cause symptoms and most present during the first decade of life.\(^2\) Hence, there is an awareness among clinicians of the possibility of the lesion presenting in infancy or childhood, but a clinical diagnosis of Meckel’s diverticulum is rarely considered pre-operatively in adults. We describe three cases admitted to one surgical unit during a three-month period, which illustrate the varying presentation of the condition in adults.

CASE 1

An 83-year-old lady was admitted with a two-day history of vomiting and abdominal distension. Examination revealed increased bowel sounds and X-rays showed distended loops of bowel with fluid levels, in keeping with small bowel obstruction. Laparotomy was performed and revealed several loops of distended small bowel, with one loop entrapped behind a mesodiverticular band, which extended from the apex of a Meckel’s diverticulum to the base of the small bowel mesentery. The diverticulum and band were resected and her post-operative course was uneventful. Histology revealed ischaemic necrosis of the diverticulum, but no heterotopic mucosa.

CASE 2

A 42-year-old man was admitted with a 10-hour history of severe lower abdominal pain. Abdominal examination revealed marked rebound tenderness in the left iliac fossa. However, on reassessment 30 minutes later, the point of maximal tenderness had surprisingly shifted to the right hypochondrium. Serum amylase and electrolytes were normal but the white cell count was elevated. Abdominal X-rays showed no free intraperitoneal gas. Laparotomy was undertaken and revealed a 5 cm long Meckel’s diverticulum with a 6 x 4 cm gangrenous pouch at the apex. The diverticulum was resected and his post-operative course was uncomplicated. When the specimen was opened it was found to contain a 4 x 3 cm enterolith. Histology revealed ischaemic necrosis and gangrene of the diverticulum but no heterotopic mucosa.

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CASE 3

A 20-year-old man was admitted following an episode of severe crampy abdominal pain, after which he lost consciousness for a few seconds. On recovery, he passed approximately one pint of bright red blood per rectum. On admission he was clinically shocked, haemoglobin 9.2 g/dl. He was resuscitated with intravenous fluids, including four units of blood. Three years prior to this he had had a similar episode. At that time, barium meal and follow-through, barium enema, coagulation screen and technetium scan to detect ectopic gastric mucosa had all been normal. Gastroscopy had revealed a superficial duodenitis which was assumed to have been the source of bleeding. On this occasion, gastroscopy was normal but a small bowel series revealed a persistent shadow, consistent with a Meckel's diverticulum (Figure). This was confirmed at laparotomy when a 6cm long Meckel's diverticulum was found. The diverticulum was resected and his recovery was uneventful. Histology revealed ulcerated ileal mucosa, adjacent to an area of heterotopic gastric mucosa.

DISCUSSION

Small bowel obstruction is reported in several series as the most common complication of Meckel's diverticulum in adults.\textsuperscript{1-4} The obstruction is often caused by entrapment of bowel behind a mesodiverticular band or a persistent omphalomesenteric artery, although other mechanisms are recognised.\textsuperscript{5,6} The estimated risk of developing such a complication in the elderly has been reported as zero,\textsuperscript{1,3} but our 83-year-old patient serves as a reminder that despite the more frequent problems in early years, Meckel's diverticulum can cause symptoms over a wide age spectrum.

Inflammation of the diverticulum is said to be the next most common presentation of disease of Meckel's diverticulum in adults.\textsuperscript{2,4} In this situation, a pre-operative diagnosis of acute appendicitis is usually made as the diverticulum is often located near the right iliac fossa. However, because of the mobility of the small bowel, symptoms and signs may be maximal in another area and thus mimic cholecystitis, pancreatitis, perforation of a duodenal ulcer or diverticulitis. This could account for the changing abdominal signs in our second patient. The chances of accurate pre-operative diagnosis of an inflamed Meckel's diverticulum are therefore slim, but there should be a high index of suspicion when clinical features of intra-abdominal inflammation are not indicative of any specific condition.

Rectal bleeding is the usual presentation of Meckel's diverticulum in children\textsuperscript{5} but in adults it is much less frequent and is almost unknown in patients over 40 years of age.\textsuperscript{2} This is a common presentation of a number of conditions and our
third patient demonstrates the difficulties in positively identifying a Meckel's diverticulum suspected as the source of gastrointestinal bleeding. In patients who are actively bleeding, angiography or 99mTc-labelled red cells\textsuperscript{7} may accurately locate the site of haemorrhage, but patients who are not actively bleeding often require extensive investigation. Abdominal scintigraphy will identify ectopic gastric mucosa in 90\% of patients in whom it is present,\textsuperscript{8} but in our patient this method failed to identify the diverticulum despite the presence of ectopic mucosa. The anatomical site of a Meckel's diverticulum makes visualisation with contrast media difficult and our patient had a negative barium meal and follow-through and a negative barium enema before the lesion was finally identified using a small bowel series. The chance of pre-operative diagnosis may be improved by using a barium small bowel enema, but it is clear that negative barium studies and scintigraphy do not exclude the presence of a Meckel's diverticulum.

There is still considerable debate in the surgical literature on the advisability of resecting a Meckel's diverticulum found incidentally at laparotomy. Several authors have attempted to correlate the anatomical characteristics of the diverticulum with the risk of its developing complications. It had previously been thought that a broad based diverticulum was less likely to become obstructed and was therefore relatively harmless. However, Mackey and Dineen have shown that diverticula with broad bases are no less likely to become symptomatic\textsuperscript{2} and Leijonmark et al present evidence that these diverticula are in fact, more likely to become symptomatic.\textsuperscript{1} Both papers suggest that the length of the diverticulum is a better indicator of the risk of complications developing.

The lifetime risk of patients developing a complication of their diverticulum has been calculated by different authors as being 4\% in childhood, 3\% during the teenage years and falling to zero in the elderly.\textsuperscript{1,3} These authors suggest that the morbidity and mortality associated with resecting an asymptomatic diverticulum is greater than the risk of developing a complication in later life. Others favour resection of a diverticulum found incidentally,\textsuperscript{4,6} especially in patients under 40 years of age.\textsuperscript{5} Our experience with these patients, all of whom suffered significant morbidity and required laparotomy in adult life, would encourage us to support the latter view.

We would like to thank Mr D M Bell and Mr W A Hanna for their permission to publish these cases.

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