Unusual presentation of more common disease/injury

Haemoperitoneum caused by perforation of Meckel's diverticulum in a 5-year-old child

David W Borowski,¹ Catherine Hobday,² Anil K Agarwal³¹ Department of Colorectal Surgery, Freeman Hospital, Newcastle upon Tyne, UK² Department of Pathology, University Hospital of North Tees, Stockton on Tees, UK³ Department of Surgery, University Hospital of North Tees, Stockton on Tees, UK

Correspondence to Anil K Agarwal, anil.agarwal@nth.nhs.uk

Summary

Common complications of Meckel's diverticulum in children include gastrointestinal haemorrhage, intestinal obstruction or intussusception and diverticulitis. Here, the rare case of a perforated, non-inflamed Meckel's diverticulum causing significant haemoperitoneum in a young child, is reported. The case highlights the potential for rapid deterioration of patients with complications from vitelline duct abnormalities, for which surgical exploration should not be delayed.

BACKGROUND

Meckel's diverticulum, the remnant of the omphalomesenteric duct, is the most common congenital abnormality of the small bowel and is present in 2% of the population. It may contain heterotopic gastric mucosa or pancreatic tissue with a highly variable reported incidence up to 50% of cases,¹ although it is likely that patients with symptomatic diverticuli have a higher incidence of ectopic tissue compared to asymptomatic patients. Common complications of this usually incidentally discovered, benign condition include gastrointestinal bleeding, intestinal obstruction, intussusception and acute diverticulitis. This case reports the rare complication of a significant intraperitoneal haemorrhage from a non-inflamed, perforated Meckel's diverticulum in a young child.

CASE PRESENTATION

A 5-year-old Caucasian boy with 23 kg body weight and no other medical history or history of trauma presented to the Emergency Department with a 24 h history of central abdominal pain and vomiting. Initial clinical examination revealed no significant abdominal findings; temperature, pulse and blood pressure were within normal range, and the patient was discharged home with no further investigations. However, within 10 h the child returned to hospital with clinical signs suggestive of acute appendicitis including tachycardia (130 beats/min with normal blood pressure), mild fever (37.4 °C) and right lower abdominal peritonism.

INVESTIGATIONS

Abnormal inflammatory parameters including elevated levels for white cell count (23.1×10^9 cells/litre) and C reactive protein (22.0 mg/litre). Furthermore, the level of haemoglobin was abnormally low (9.9 g/dl).

DIFFERENTIAL DIAGNOSIS

With deteriorating clinical signs, including increasing pain, respiratory rate and tachycardia, the patient was taken to

the operating room with suspected acute appendicitis within 2 h of readmission.

TREATMENT

At surgery, carried out through a Lanz incision, 260 ml of fresh blood with clots (15% of the estimated total blood volume) were evacuated from the peritoneal cavity, originating from the mucosal surface of a perforated Meckel's diverticulum (figure 1). A short segment of ileum containing the diverticulum was resected with an end-to-end anastomosis. The macroscopically normal appendix was also excised. Histology confirmed the presence of a perforated Meckel's diverticulum containing heterotopic gastric mucosa with reactive local serosal inflammation, but no signs of underlying diverticulitis (figure 2). The microscopically normal appendix contained a small faecolith.

OUTCOME AND FOLLOW-UP

The patient made an uncomplicated postoperative recovery and was discharged home 3 days later.

DISCUSSION

Common complications from Meckel's diverticulum include chronic or acute gastrointestinal blood loss (in up to 50%), intestinal obstruction and intussusception. Acute diverticulitis is found in up to 20% of complications arising from Meckel's diverticuli, most commonly in adults, often mimicking acute appendicitis and occasionally leading to perforation and peritonitis.¹ In a large case series reporting on the complications from Meckel's diverticuli in children, perforation was uncommon compared to other presentations.² Acute intraperitoneal haemorrhage from a perforated Meckel's diverticulum is a rare complication,^{3–5} in particular in children and in the absence of acute diverticulitis. Intraperitoneal haemorrhage associated with Meckel's diverticulitis without perforation also has been reported.⁶ In the absence of acute inflammatory changes within the diverticulum, the underlying pathology and cause of the

Figure 1 Operative finding of a perforated Meckel's diverticulum.

Figure 2 Perforation of Meckel's diverticulum with blood and fibrin on surface and ectopic gastric mucosa (arrow). Magnification $\times 100$.

perforation in the here presented case was likely of peptic origin. Considering the potentially life-threatening blood loss in cases of young children with rapidly deteriorating clinical picture and signs of peritoneal irritation, surgical exploration should not be delayed.

Learning points

- ▶ Common complications of Meckel's diverticulum include gastrointestinal bleeding, intestinal obstruction, intussusception and acute diverticulitis.
- ▶ Perforation of a non-inflamed Meckel's diverticulum is a rare and potentially life-threatening complication.
- ▶ Surgical exploration of children presenting with rapidly deteriorating vital signs and peritoneal irritation should not be delayed.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Evers BM**. Small intestine – Meckel's diverticulum. In: Townsend CM, Beauchamp RD, Evers BM, *et al*, eds. *Sabiston textbook of surgery*. 17th edn. Philadelphia, Pennsylvania, USA: Elsevier Saunders, 2004:1463–5.
2. **Vane DW**, West KW, Grosfeld JW. Vitelline duct anomalies. Experience with 217 childhood cases. *Arch Surg* 1987;**122**:542–47.
3. **Fowler CL**, Ohlms LA, Reid BS, *et al*. Hemoperitoneum from perforated Meckel's diverticulum. *J Pediatr Surg* 1988;**23**:982–3.
4. **Jelenc F**, Strlic M, Gvardijancic D. Meckel's diverticulum perforation with intraabdominal hemorrhage. *J Pediatr Surg* 2002;**37**:E18.
5. **El-Hussuna A**, Zeb A, Mogensen AM, *et al*. [Perforation of Meckel's diverticulum with intraabdominal hemorrhage and periappendicular inflammation]. *Ugeskr Laeg* 2009;**171**:3676–7.
6. **Burt BM**, Tavakkolizadeh A, Ferzoco SJ. Meckel's hemoperitoneum: a rare case of Meckel's diverticulitis causing intraperitoneal hemorrhage. *Dig Dis Sci* 2006;**51**:1546–8.

This pdf has been created automatically from the final edited text and images.

Copyright 2010 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Borowski DW, Hobday C, Agarwal AK. Haemoperitoneum caused by perforation of Meckel's diverticulum in a 5-year-old child. *BMJ Case Reports* 2010; 10.1136/bcr.01.2010.2662, date of publication

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow