CASE REPORT

Stercoral perforation in a child: a rare complication of NSAID use

Yasser Al Omran,¹ Saeed Al Hindi,² Sharif Alarayedh,² Aamenah Hawash¹

¹Barts and The London School of Medicine and Dentistry, London, UK
²Salmaniya Medical Center, Manama, Bahrain

Correspondence to
 Yasser Al Omran,
 y.alomran@smd10.qmul.ac.uk

Accepted 9 February 2014

SUMMARY

The adverse effects of non-steroidal anti-inflammatory drugs (NSAIDs) on the gastrointestinal (GI) tract are well known. However, NSAID use rarely leads to a stercoral perforation, an extremely rare but life-threatening cause of acute abdomen. We present a case of stercoral sigmoid colon perforation in a 2-year-old girl, secondary to unintentional NSAID overdose, developing as a result of miscommunication between the general practitioner (GP) and the mother. To the best of our knowledge, stercoral perforation has never before been reported in a child.

BACKGROUND

Non-steroidal anti-inflammatory drugs (NSAIDs) are some of the most commonly used drugs in the world, for a multitude of conditions.¹ However, there are side effects associated with their use, the most common being disorders of the digestive tract mucosa.² This case adds weight to recent literature arguing the importance of a high index of suspicion with regard to their equal-incidence effects on the lower gastrointestinal (GI) tract,³ and describes a potentially life-threatening complication of NSAID use in children. We present a case of stercoral sigmoid colon perforation in a 2-year-old girl, who as a result of miscommunication between the patient's mother and the general practitioner (GP), was started on high-dose ibuprofen.

CASE PRESENTATION

A 2-year-old girl presented to her GP with a 3-day history of cough, fever (38.5°C) and general aches. On clinical examination, normal breath sounds were audible and there were no signs of consolidation. A presumption of a viral acute upper respiratory tract infection was made. Based on the patient's weight (14 kg), she was treated with a single 50 mg dose of diclofenac suppository at the GP clinic to reduce the symptoms, and the mother was advised to buy over the counter 100 mg/5 mL ibuprofen syrup to be given eight hourly for the next 2 days to reduce the symptoms. It was later revealed that the patient's mother had misunderstood the recommended dose and provided her with 500 mg/12.5 mL every 8 h.

Two days after presenting to the GP, the patient was brought into accident and emergency by ambulance. At presentation the patient's mother revealed that she had not cleared her bowels for 5 days. Clinical assessment revealed a temperature of 39.1°C, a heart rate of 155 beats per minute, a respiratory rate of 50 breaths per minute and a

blood pressure of 90/45 mmHg. She also had generalised abdominal pain associated with vomiting, and was moderately dehydrated. Her abdomen was distended, with signs of widespread guarding and rebound tenderness. The patient was immediately resuscitated and blood tests and CT scan was undertaken.

INVESTIGATIONS

Blood tests were notable for a raised white cell count (WCC) count of $20.5 \times 10^9/L$ (80% neutrophils).

Coronal anteroposterior (AP) CT scan demonstrated free air under the diaphragm and abundant faecal matter in the pelvis (figure 1). Contrast-enhanced axial CT scan demonstrated portal and retroperitoneal air, a mild pneumoperitoneum and ascetic fluid (figure 2). In addition there was a mild enhancement of the rectal and sigmoid mucosa with a small pocket of retroperitoneal air at the rectosigmoid junction (figure 3). Based on these CT scans, a preoperative presumption of large bowel, (most likely sigmoid) perforation was assumed.

TREATMENT

An exploratory laparotomy of the abdomen was performed. The descending and recto-sigmoid colons were both distended and the pelvic

To cite: Al Omran Y, Al Hindi S, Alarayedh S, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-203652

Figure 1 Anteroposterior (AP) coronal CT scan image showing a faecolma in the pelvis (arrow) and free air under the diaphragm (arrow head).

Figure 2 Contrast-enhanced axial CT scan demonstrates a faecaloma in the proximal sigmoid colon (white arrow head) and at the site of the perforation, with colonic wall thickening (white arrowhead) due to pressure necrosis. Ascitic fluid between the liver and the abdominal wall (black arrow), pneumatosis, portal and retroperitoneal air, and a mild pneumoperitoneum (asterisk) can also be seen.

intraperitoneal cavity was extensively contaminated with faecal matter. Peritoneal irrigation with normal saline was used to clear the faecal residue. On closer inspection, there was a 2 cm×2 cm perforation on the antimesenteric side of the sigmoid colon. A double-barrel colostomy was undertaken at the perforation area. The patient recovered from the operation and was discharged a week after surgery.

OUTCOME AND FOLLOW-UP

Two months postdischarge, a double-contrast barium enema study and a rectal biopsy was undertaken. There were no signs of aganglionosis and the patient's colostomy was closed. The patient is now 4 years old and is otherwise healthy.

DISCUSSION

The adverse effects of NSAIDs on the GI tract are well reported within the literature.^{1 3–5} Owing to the absence of a secondary cause, we believe that the large dose of Ibuprofen taken by the patient and the resulting constipation led to the sigmoid perforation.

Stercoral perforation has been defined as a 'perforation of the large bowel due to pressure necrosis from a faecal mass'.⁶ They

are exceptionally rare, with less than 150 cases being reported in the literature; none of which have been reported in children.⁷ Owing to the presence of all three diagnostic criteria reported by Maurer *et al*:⁸ (1) an ovoid or rounded colonic perforation, more than 1 cm in diameter, and is antimesenteric; (2) the presence of faecalomas within the colon, protruding from the perforation site, or lying within the abdominal cavity and (3) pressure necrosis or ulcer formation and chronic inflammatory reaction around the perforation site microscopically, we believe this case to be the first reported case of stercoral sigmoid colon perforation as a result of NSAID use in a child.

Furthermore, a recent systematic review revealed that stercoral perforations are most common at the sigmoid colon,⁷ and an association between their occurrence and the long-term use of NSAIDs has previously been explored.⁹ However, two cases of short-term intestinal perforation have been reported: the first, describes concomitant use of clindamycin, which may have contributed to a more susceptible bowel mucosa,¹⁰ and the other describes an overdose of 238 tablets of diclofenac 50 mg. Therefore, stercoral perforations may occur even with short-term use of NSAIDs.¹¹

In addition, as evidenced by this case, doctor–patient communication is critical in any consultation. Owing to the patient's mother's misunderstanding, a near fatality occurred. Therefore, this case serves as a reminder of the importance of assessing what the patient (or relative) already knows, and providing them with clear and understandable information when advising or prescribing, even for over-the-counter medications.

Learning points

- ▶ Stercoral perforation in the differential diagnosis of any presentation of peritonitis with a background of constipation from non-steroidal anti-inflammatory drugs (NSAIDs) use.
- ▶ Educate parents on the use of high-dose NSAIDs in children.
- ▶ Clear doctor–patient communication is vital in every consultation.

Contributors YAO carried out the writing of the manuscript, literature research and approval of the images used in the case report. SAH supervised the entire process, contributed to the discussion, and was involved in the selection of the images used in the case report. SA was responsible for acquiring informed consent from the patient's parents and retrieved and commented on images. AH assisted in writing, reviewing and editing the final manuscript. All authors have read and approved the final manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Park SC, Chun HJ, Kang CD, *et al*. Prevention and management of non-steroidal anti-inflammatory drugs-induced small intestinal injury. *World J Gastroenterol* 2011;17:4647–53.
- 2 Allison MC, Howatson AG, Torrance CJ, *et al*. Gastrointestinal damage associated with the use of nonsteroidal antiinflammatory drugs. *N Engl J Med* 1992;327:749–54.
- 3 Laine L, Curtis SP, Langman M, *et al*. Lower gastrointestinal events in a double-blind trial of the cyclo-oxygenase-2 selective inhibitor etoricoxib and the traditional nonsteroidal anti-inflammatory drug diclofenac. *Gastroenterology* 2008;135:1517–25.
- 4 Laine L, Smith R, Min K, *et al*. Systematic review: the lower gastrointestinal adverse effects of non-steroidal anti-inflammatory drugs. *Aliment Pharmacol Ther* 2006;24:751–67.

Figure 3 Contrast-enhanced axial CT scan showing a mild enhancement of the rectal and sigmoid mucosa with a small pocket of retroperitoneal air at the rectosigmoid junction.

- 5 Sostres C, Gargallo CJ, Arroyo MT, *et al.* Adverse effects of non-steroidal anti-inflammatory drugs (NSAIDs, aspirin and coxibs) on upper gastrointestinal tract. *Best Pract Res Clin Gastroenterol* 2010;24:121–32.
- 6 Durrans D, Redmond EJ, Marshman L. Stercoral perforation of the colon. *Br J Surg* 1991;78:1148.
- 7 Chakravartty S, Chang A, Nunoo-Mensah J. A systematic review of stercoral perforation. *Colorectal Dis* 2013;15:930–5.
- 8 Maurer CA, Renzulli P, Mazzucchelli L, *et al.* Use of accurate diagnostic criteria may increase incidence of stercoral perforation of the colon. *Dis Colon Rectum* 2000;43:991–8.
- 9 Patel VG, Kalakuntla V, Fortson JK, *et al.* Stercoral perforation of the sigmoid colon: report of a rare case and its possible association with nonsteroidal anti-inflammatory drugs. *Am Surg* 2002;68:62–4.
- 10 Schiffmann L, Kahrau S, Berger G, *et al.* Colon perforation in an adolescent after short-term diclofenac intake. *ANZ J Surg* 2005;75:726–7.
- 11 Mandegaran R, Conway C, Elton C. Lower gastrointestinal adverse effects of NSAIDs: an extreme example of a common problem. *BMJ Case Rep*. Published online: 20 Feb 2013. doi:10.1136/bcr-2012-008274

Copyright 2014 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.

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