CASE REPORT

Duodenal perforation in an infant with rotavirus gastroenteritis

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SUMMARY

We describe for the first time a case of an infant with rotavirus gastroenteritis complicated by a duodenal perforation. Awareness of the perforation risk may prevent severe or lethal outcomes in this common infection among infants and children.

BACKGROUND

Gastrointestinal perforations are rare in the paediatric population and are mainly observed in sick preterm infants or in older children receiving intensive care.[1] Reports on intestinal perforations associated with gastroenteritis are few and are missing on rotavirus-related infections.

Rotavirus is a frequent cause of acute gastroenteritis in childhood.[2] It is usually a rather benign and self-limiting disease. However, worldwide it is estimated that rotavirus infections are responsible for half a million annual deaths in children, primarily related to acute severe dehydration. Rotavirus-related deaths are also reported in European countries, most frequently among infants[3] and in neonates with rotavirus-associated necrotising enterocolitis.[4 5]

CASE PRESENTATION

A previously healthy 9-month-old boy was admitted with clinical signs of severe dehydration after 5 days of diarrhoea, vomiting and fever. At home he had been given paracetamol, but no other medication. Upon admission he was lethargic and had clinical signs of shock with cold extremities, a prolonged capillary refill time (>3 s) and tachycardia. He responded clinically to fluid resuscitation, but developed abdominal pain, haematemesis and a distended abdomen. A plain abdominal x-ray revealed free subdiaphragmatic air (figure 1). He was operated and a small postpyloric duodenal perforation was detected and surgically closed. The postoperative course was uneventful.

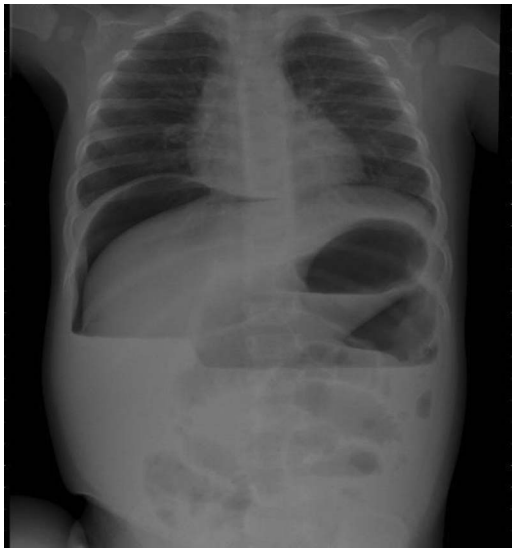

Figure 1 Free subdiaphragmatic air on plain abdominal x-ray of 9-month-old boy with duodenal perforation associated with rotavirus gastroenteritis.

Rotavirus antigen was found in the faeces. Stool cultures did not reveal pathogenic bacteria. *Helicobacter pylori* antigen in faeces was negative. The serum gastrin level was normal. Endoscopy 3 months later revealed normal findings and histological analyses of gastric and duodenal mucosa were all normal.

DISCUSSION

A gastrointestinal perforation associated with acute diarrhoeal disease in children is very rare. We

Table 1 Previous paediatric reports on gastrointestinal perforations associated with acute diarrhoeal disease

Author	Sex	Age	Medical history	Acute symptoms of gastroenteritis	Dehydration	Haematemesis	Site of perforation
Johnstone *et al*[7]	Boy	1 year	Healthy	Loose stools and vomiting	+	ND	Duodenal
Bell *et al*[6]	ND	6 months	Healthy	Diarrhoea and vomiting	+	+	Duodenal
Tan *et al*[9]	Girl	3 year	Aqueductal stenosis and VP shunt	Diarrhoea and vomiting	+	+	Duodenal
Wilson *et al*[10]	Boy	7 year	Neurologically disabled	Diarrhoea and vomiting	+	+	Duodenal
Lee *et al* [8]	Boy	3 month	Healthy	Diarrhoea	ND	+	Duodenal
Shimizu *et al*[11]	Girl	3 month	Hypothyroidism	Vomiting	+	–	Gastric

ND, no data; VP, ventriculoperitoneal.

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conducted a structured literature search in PubMed for the period from 1960 to 2012 using combinations of the search words 'intestinal perforation', 'rotavirus', 'acute diarrhoea' 'children' and 'paediatric', with non-English papers and papers on neonates (first 28 days of life) with gastrointestinal perforations being excluded. We found only five cases reporting a similar clinical picture as in this patient (table 1), all with duodenal perforation site and haematemesis and one additional paediatric case with rotavirus-associated gastric rupture.[6–11] None of the cases with duodenal perforation were diagnosed with a rotavirus infection. However, Nejihashi *et al*[12] recently described a healthy infant with rotavirus gastroenteritis who presented with haematemesis owing to a non-perforated bleeding duodenal ulcer.

We urge clinicians to consider gastrointestinal perforation as a potentially severe complication in children with acute gastroenteritis, dehydration and in particular if the abdomen is distended and there is haematemesis. A plain abdominal x-ray may reveal pneumoperitoneum and guide appropriate treatment.

Learning points

- Gastrointestinal perforation in infants and children with rotavirus infections is rare, but a severe and potentially lethal complication.
- Awareness of this complication in children with severe gastroenteritis is important for appropriate treatment.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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