

PERFORATED DUODENAL ULCER: AN UNUSUAL COMPLICATION OF MENINGITIS*

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An 11-month-old boy was admitted to the hospital with fever, vomiting and seizures and was diagnosed with purulent meningitis. Two days later, an acute, perforated, duodenal ulcer was detected in the patient. Surgery was performed, and the patient made an uncomplicated recovery. Peptic ulceration is underdiagnosed in children and this leads to delay in diagnosis and appropriate management. Peptic ulceration may occur during severe illness or viral infections, but perforation is rare. *Key words:* purulent meningitis, duodenal ulcer.

Acute peptic ulcer is not rare in childhood but remains underdiagnosed. Despite this, it is not featured prominently in textbooks, where it is said to be an uncommon but well-recognized complication of many serious diseases as well as severe stress in childhood¹. A child with an acute peptic ulcer usually presents with vomiting or gastrointestinal hemorrhage or both, or the ulcer may be an accidental finding at necropsy, with perforation a rare occurrence^{2,3}.

We report perforation of an acute duodenal ulcer in an 11-month-old boy who had purulent meningitis.

Case Report

An 11-month-old boy was admitted to the hospital with a seven day history of vomiting, fever and generalized seizures. On admission, the boy was spastic, and his weight was at the 25th percentile. He had a bulging anterior fontanel. Laboratory examination revealed a hemoglobin concentration of 10.8 g / dl, white blood cell count of 8800 / mm³ with a differential count of 74% neutrophils, 6% band forms, 20% lymphocytes and a normal platelet count. Urinalysis and

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biochemical tests were normal. Cerebrospinal fluid was cloudy, polymorphonuclear leukocytes $500 / \text{mm}^3$, protein 90 mg / dl , and the glucose level was below detectable limits. Diphtheroid bacilli grew in the cerebrospinal fluid culture. The patient was diagnosed with purulent meningitis and penicillin G, chloramphenicol and phenobarbital were administered for treatment.

Two days later, vomiting recurred the patient's abdomen become mildly distended. On rectal examination, the feces were soft and normal in color. On radiographic examination, free air was detected under the diaphragm (Fig. 1). In surgery his abdomen was found to be extremely distended, and 300 ml of bile-stained fluid contaminated with food was evacuated. The stomach and duodenum were exposed, and a perforated acute duodenal ulcer 2 cm in diameter was found. Postoperatively, the patient recovered with no complication. Subsequent estimation of serum gastrin concentration was normal.

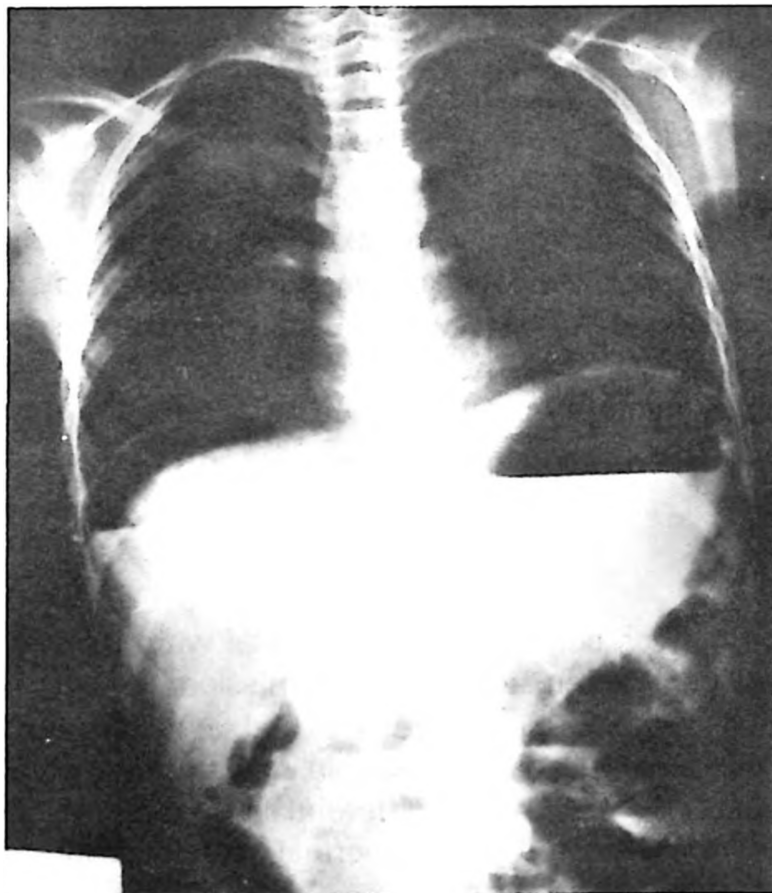


Fig. 1: Abdominal x-ray showing free air under the diaphragm.

Discussion

The occurrence of peptic ulceration in children has been recognized for many years, but the real incidence is unknown ($3-4 / 10000-1 / 4700$)^{2,4}. Peptic ulcer

disease in children is generally described as being either primary or secondary. Primary ulcers occur in the absence of underlying systemic disease, and present at a mean age of eight years in the pediatric population. the male: female ratio is 4: 1. There is often a strong family history⁴. Secondary ulcers or stress ulcers account for at least 80 percent of peptic ulcer disease encountered during infancy and early childhood, but in older age groups the incidence drops to 20 percent. Stress ulcers are associated with shock, respiratory failure, sepsis, hypoglycemia, severe burns (Curling's ulcer) and intracranial lesions^{5,6}. We believe that in our case, the stress ulcer occurred because of an intracranial lesion. Stress ulcer is generally an acute disorder. Males and females are affected equally. The distribution has been described as equal between the stomach and duodenum. Patients with stress ulcers generally present with hemorrhage. Perforation is quite rare, however the risk of perforation is higher in duodenal ulcer than gastric ulcer⁷⁻¹⁰.

The incidence of perforated peptic ulcer is 6.9-8.7 / 100,000 overall, but the real incidence in children is unknown¹¹. In 1826, a perforated gastric ulcer was reported in a 2-day-old child¹². At the Hospital for Sick Children, Toronto, only six perforations were detected in 20 years³, and at Montreal Children's Hospital there were eight in 11 years². In a study of 54 children, only eight perforations were reported¹³. Acute duodenal ulceration was reported by Hsu in a study of 31 children and by Murphy in a study of 110 cases. None of these ulcers had perforated^{14,15}. In 1990, Wilson presented a patient with a perforated duodenal ulcer as an unusual complication of gastroenteritis¹.

The presented case is interesting because of the development of perforated duodenal ulcer during the course of purulent meningitis. Acute duodenal ulcer may occur during severe illness or viral infections, but perforation is rare.

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