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DUODENAL PERFORATION IN STRESS ULCER IN A PEDIATRIC PATIENT: CASE REPORT

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ABSTRACT

Stress ulcers are rare in pediatric patients but can lead to severe, life-threatening complications. We report the case of a 2-year-old boy admitted to the pediatric intensive care unit for acute respiratory distress, who developed a sudden duodenal perforation during hospitalization. Despite emergency surgery, the outcome was fatal due to rapid progression to septic shock. The diagnosis was delayed, likely due to masked symptoms under deep sedation, and no gastrointestinal risk factors were identified. The absence of prophylactic treatment for stress ulcers may have contributed to the severity of the complication. This case highlights the need for routine gastrointestinal monitoring and prophylaxis protocols in critically ill children to help prevent such outcomes.

KEYWORDS

Stress ulcers; duodenal perforation; intensive care units

MAIN ARTICLE

Introduction

Stress ulcers of the stomach and duodenum are rare complications, but they are well recognized in critically ill children admitted to pediatric intensive care units (PICU). These are acute ulcers that develop suddenly and can sometimes become severe. The gastro-duodenal mucosa shows lesions that can range from superficial erosion to deep acute ulcers. These ulcers are not surrounded by sclerosis and do not progress to chronicity (3).

In the absence of appropriate treatment, this condition can lead to gastric or duodenal perforations, with potentially fatal consequences.

The rarity of such perforations has prompted us to report a case managed in the pediatric surgical emergency department.

This case highlights the importance of clinical vigilance and prompt surgical exploration in critically ill pediatric patients, especially those at risk of stress-related ulcers.

Case Presentation

A 2-year-old boy was admitted to the intensive care unit for respiratory distress due to epiglottitis. He was sedated and intubated upon admission.
During his ICU stay (figure1), complications arose, notably abdominal distension with a board-like abdomen, absence of stool and gas, and bile return through the nasogastric tube. His C-reactive protein level rose from 63 mg/L at admission to 343 mg/L, and the white blood cell count was 13,300/mm^3. An abdominal CT scan revealed pneumoperitoneum with a large volume of fluid accumulation, leading to the decision to proceed with surgical exploration (figure2).

Figure1: An intubated pediatric patient in the intensive care unit, lying in bed under sedation, connected to a mechanical ventilator and surrounded by monitoring equipment

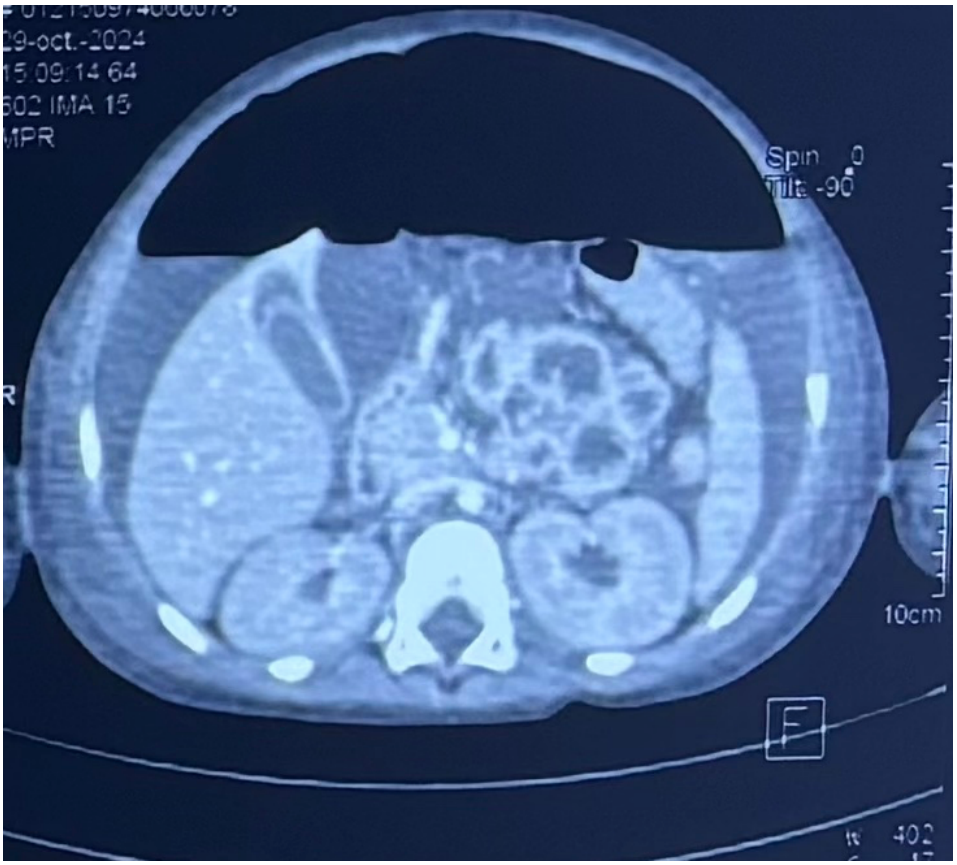

Figure2: A CT scan image showing pneumoperitoneum

The patient was taken to the operating room, and a midline abdominal incision was performed. Upon opening the peritoneum, 2 liters of greenish fluid were aspirated, indicating the presence of bile and peritonitis. Thorough exploration of the abdomen revealed a 2 cm perforation in the first portion of the duodenum (figure3).

Figure 3: Perioperative findings: duodenal perforation

Primary closure of the duodenal perforation was performed using interrupted sutures with 3-0 absorbable thread. A gastrostomy was created, and the abdominal cavity was thoroughly irrigated with saline to remove biliary residues and debris. The abdominal wall was then closed after placement of two peritoneal drains to ensure adequate drainage and prevent fluid accumulation.

The patient remained sedated and intubated, and was placed on triple antibiotic therapy. In the following days, the patient died due to sepsis and multiple organ failure.

Discussion

Stress ulcers in children are rare and occur in children who are hospitalized for long periods in intensive care units. The reported incidence of stress induced lesions of the gastrointestinal tract in children varies from 6 to 33% [2]. Among the complications reported, upper gastrointestinal bleeding is one of the most common complications in critically ill children admitted to the pediatric intensive care unit. The incidence in adults is highly variable, ranging from 0.17% to 14%, according to the diagnostic criteria used and patient and evaluation characteristics [3-4]. Data in children are less frequent, but 10% in pediatric intensive care unitand up to 53% in neonatal intensive care units were described in some studies [5-6]. When they are not treated, stress ulcers can occasionally become perforated in the stomach or duodenum, with potentially serious consequences. The literature on pediatric

stress ulcers is scarce, with most published cases being bleeding forms rather than perforating forms [7].

However, few clinical cases have been reported with perforated duodenal ulcers associated with complicated acute appendicitis, such as major gastrointestinal bleeding and even perforated appendicitis at the same time [8-9]. The use of prophylaxis is still not well defined in those patients. Some authors suggest that it should be given to children under mechanical ventilation, trauma, PRISM score >10, coagulopathy, liver or kidney failure, hypotension and/or arrhythmias, while some authors use it systematically without clearly indicating use [5-9]. Preventive treatment is based on PPI, H2 receptor antagonists and antacid, but their effectiveness is still under debate [7].

In the presence of suspected gastrointestinal perforation, abdominopelvic CT scan is the examination of choice. Indeed, it is much more sensitive than standard radiography for the detection of free intraperitoneal air with a performance above 90% in case of digestive perforation and above 85% in case of small intestine perforation [10]. The direct CT signs are the free air detection even in very small amount and the leakage of oral contrast while indirect signs may be exudate, abscess or inflammatory mass [11-12-13].

In our case, an explorative laparotomy was performed in an urgent way after CT confirmation. Although such cases are rare, perforation of the stomach or duodenum is a surgical emergency and can lead to septic peritonitis. In our case, diagnosis of duodenal perforation was conducted with delay because of the insidious nature of the process. The patient did not survive, despite immediate operation, because of already advanced sepsis. Since patients in intensive care units are at high risk for stress ulcer, it is very important to recognize the complications and immediate action is necessary. In this case, our patient was still sedated after the neurosurgical operation and it was extremely difficult to secure correct clinical judgment.

Conclusion

Stress ulcers in children although rare are a potentially serious complication in pediatric intensive care, particularly in the case of perforated forms. This case illustrates the importance of a cautious clinical surveillance in front of digestive symptoms, even in a sedated and intubated patient. Duodenal perforation, although exceptional, should be considered in the presence of signs, requiring fast orientation and imaging, even if it questions the interest of a very early surgical management. This case gives relevance to the idea of drafting a straight protocol for stress ulcer prophylaxis in children and that early and appropriate management is the only way to make the difference.

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