

Pediatric Gastric Perforation Associated with Multisystem Inflammatory Syndrome in Children (MIS-C)

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Introduction

Gastric perforation is a rare life-threatening condition in pediatric population beyond the neonatal period, which requires urgent diagnosis and surgical intervention. Etiology varies depending on age at presentation. Gastric perforation may have an association with MIS-C.

Case Summary

We reported a case of a 3-year-old girl with gastric perforation. She presented with fever, acute abdominal distension and pain, respiratory distress, and metabolic acidosis. Clinically, she was septic with peritonitis, abdominal and chest radiographs showed pneumoperitoneum and left pleural effusion respectively (Fig. 1). An urgent exploratory laparotomy revealed single perforation 7x7mm at the anterior aspect of prepyloric region with sloughy edges (Fig. 2). Primary repair with omental patch performed. The patient requires intensive care unit admission postoperatively. In view of persistent fever, MIS-C workout was done. Results revealed COVID-19 antigen was positive, raised inflammatory markers with lung pneumonic changes. The child required total parenteral nutrition and escalation of antibiotics with 3 days of oxygen support. Feeding was initiated on post-op day 5 and discharged home on day 7. post-operation. Biopsy of the stomach edges showed inflammatory changes and negative for *Helicobacter pylori* infection.

Discussion

Gastric perforation in pediatric is rare and more common during neonatal age¹. Few cases of gastric perforation have been reported occurring beyond the neonatal period. Etiologies are peptic ulcer, congenital defect of stomach musculature, mechanical injury, foreign body ingestion, anorexia nervosa, and bowel ischemia².

Recently during this COVID 19 pandemic, there have been reports of gastrointestinal perforation which may be caused by multisystem inflammatory syndrome in children (MIS-C)^{5,6}.

The WHO preliminary case definition for MIS-C requires age <19, fever >3 days, and two of the followings, rash or bilateral non-purulent conjunctivitis or mucocutaneous inflammation signs, hypotension or shock, features of myocardial dysfunction or pericarditis or valvulitis or coronary abnormalities, evidence of coagulopathy, acute gastrointestinal problems AND elevated markers of inflammation such as ESR, C-reactive protein, or procalcitonin AND no other obvious microbial cause of inflammation, including bacterial sepsis, staphylococcal or streptococcal shock syndromes, AND evidence of COVID-19 (RT-PCR, antigen test or serology positive), or likely contact with patients with COVID-19^{3,4}.

In our case, MIS-C was not initially suspected since our patient came with acute abdomen due to perforated viscus. However, she had worsening symptoms (respiratory distress, fever) postoperatively and required oxygen support. Therefore, further investigations performed and showed positive COVID 19 antigen.



Figure 1 : Pneumoperitoneum

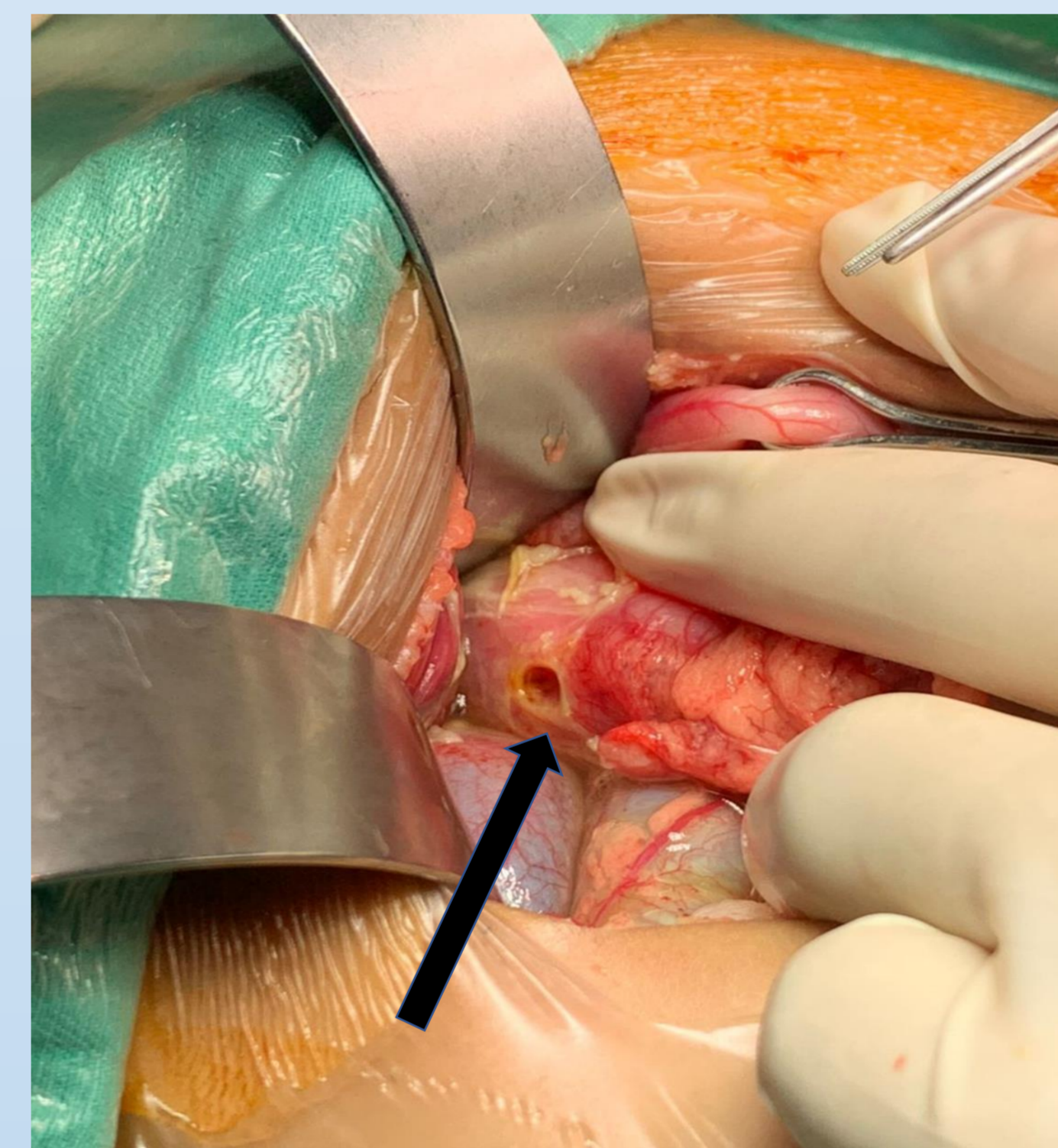


Figure 2 : Site of perforation at prepyloric region

It has been postulated that the formation of antibodies via COVID 19 infection leads to raised inflammatory markers and these antibodies may lead to ase highlighted the possibility of MIS-C post-COVIDintestinal or gastric perforation⁵. The exact pathophysiology is still not known, however, it is recommended to suspect MIS-C as the cause of gastrointestinal perforation especially during this COVID 19 pandemic era. Other etiology such as gastrin producing tumor need to be excluded.

As we move towards the endemic phase, we have to be aware of seeing more complications associated with MIS-C. Nevertheless, more data is required to ensure widespread awareness of COVID 19 complications.

Conclusion

Gastric perforation in pediatric patients is a rare entity. This c-19 infection as an etiology of gastric perforation.

References

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