

Answers to Medical Quiz

A1. Figure 1 is a lateral view through plain X-ray, and figure 2 is an anterior-posterior plain X-ray.

A2. Large amount of pneumoperitoneum in figure 1 and tennis ball sign in figure 2.

A3. Gastric perforation and bowel perforation.

DISCUSSION

Neonatal gastric perforation is a rare surgical emergency associated with high morbidity and mortality. It accounts for 7% of all neonatal gastrointestinal perforations. The etiology of this condition is unknown. Three theories were postulated: ischemia, trauma, and spontaneous perforation are acceptable mechanisms for gastric perforation in neonate¹.

Neonatal gastric perforation can be classified into primary pathology, such as gastroschisis, tracheoesophageal fistula and duodenal obstruction. These pathologies could raise intragastric pressure leading to gastric perforation².

The secondary pathology, such as bag-mask resuscitation, forceful nasogastric tube insertion, and positive pressure ventilation are the most common causes of neonatal gastric perforation. Sepsis, hypoxia, prematurity, and stress in the neonate are other causes which could explain the ischemic effect of gastric mucosa leading to gastric perforation^{1,2}.

Spontaneous gastric perforation could be due to vomiting or incoordination in preterm infants. This condition is usually found in full-term newborns, but could also be found in low-birth weight, hypoxic and premature infants³.

Gastric and intestinal perforation in preterm is commonly due to necrotizing enterocolitis³.

The clinical features of gastric perforation in neonates include lethargy, vomiting, abdominal distension and respiratory distress. Abdominal distension was the most common clinical findings reported in 71% of patients. The respiratory distress was reported in 50% of patients; the distress depends on the severity of abdominal distension. Pneumoperitoneum is one of the prominent findings in plain x-rays in cases of neonatal gastric perforation⁴.

The incidence of neonatal gastric perforation is 1 in 5000 live births. Neonatal gastric perforation is higher in male than female and more common in black than white⁴.

The main management is surgical intervention after resuscitation. The prognosis of this condition depends on early diagnosis, resuscitation and early surgical intervention⁵. High mortality risk factors are associated with hypoxia, duration of illness and maturity degree^{6,7}.

CONCLUSION

Neonatal gastric perforation is a rare emergency surgical catastrophe. The clinical presentation of neonates with gastric perforation is usually with abdominal distention and respiratory distress. Pneumoperitoneum is one of the prominent radiological finding in neonates with gastric perforation. The principal management is surgical intervention. The outcome depends on the maturity degree and associated anomalies in these critical patients.

Potential Conflicts of Interest: None.

Competing Interest: None.

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REFERENCES

1. Aydin M, Zenciroglu A, Hakan N, et al. Gastric Perforation in an Extremely Low Birth Weight Infant Recovered with Percutaneous Peritoneal Drainage. *Turk J Pediatr* 2011; 53(4):467-70.
2. Khan YA, Akhtar J. Pneumoscrotum: A Rare Presentation of Gastric Perforation in Neonate. *APSP J Case Rep* 2010; 1(2):15.
3. Kshirsagar AY, Vasisth GO, Ahire MD, et al. Acute Spontaneous Gastric Perforation in Neonates: A Report of Three Cases. *Afr J Pediatr Surg* 2011; 8(1):79-81.
4. Terui K, Iwai J, Yamada S, et al. Etiology of Neonatal Gastric Perforation: A Review of 20 Years' Experience. *Pediatr Surg Int* 2012; 28(1): 9-14.
5. Gupta R, Bihari Sharma S, Golash P, et al. Pneumoperitoneum in the Newborn: Is Surgical Intervention Always Indicated? *J Neonatal Surg*. 2014; 3(3):32.
6. Yang CY, Lien R, Fu RH, et al. Prognostic Factors and Concomitant Anomalies in Neonatal Gastric Perforation. *J Pediatr Surg* 2015; 50(8):1278-82.
7. Byun J, Kim HY, Noh SY, et al. Neonatal Gastric Perforation: A Single Center Experience. *World J Gastrointest Surg* 2014; 6(8):151-5.