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ภาวะลำไส้ทะลุในการกแรกเกิดครบกำหนด

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ภาวะลำไส้ทะลุในทารกแรกเกิดครบกำหนด

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Introduction

Spontaneous intestinal perforation (SIP) is emergency and life-threatening condition of unknown etiology, commonly seen in extremely low birth weight preterm infants (ELBW <1,000 g). Risk factors associated with SIP are prematurity, low birth weight, asphyxia, neonatal hypotension, umbilical arterial catheter insertion, antenatal magnesium exposure and exposure to indomethacin or corticosteroids.^(1, 2, 3) Clinical of SIP can be presented with abdominal distension, emesis, feeding intolerance, abdominal discoloration, peritonitis, tachycardia, and hypotension.^(4, 5) In term infants, SIP is rare condition with unclear causes, but it can occur spontaneously, like preterm infants, or can be secondary to trauma or obstruction.⁽⁶⁾

Case Presentation

A 1-day-old male newborn was born to a healthy mother via caesarean section at 38 weeks of gestation with history of previous caesarean section and meconium-stained amniotic fluid. Upon delivery, the baby was noted to have low Apgar scores of 4, 5 and 8 at 1, 5 and 10 minutes, respectively. The baby also had signs of fetal growth restriction, with a birth weight 2,550 gm which was below the 10th percentile for gestational age. An examination of the umbilical cord revealed the presence of a true knot. The baby was resuscitated with positive pressure ventilation 1 cycle and was admitted to the neonatal intensive care unit, with respiratory support of nasal continuous positive airway pressure (NCPAP). The baby's clinical improved within 6 hours and laboratory showed normal value. The baby can breathe normally in room air and began to feed at 9 hours of life. Abdominal distension, feeding intolerance and hyperglycemia was noted after feed. Empirical antibiotics with ampicillin and gentamicin had been started. At 20 hours of life, the baby still had abdominal distension with hyperglycemia then septic work up had been done recently. Laboratory showed mild leukocytosis, acute kidney injury, metabolic acidosis, transaminitis and coagulopathy. Abdominal radiographs revealed pneumoperitoneum which suspected bowel perforation. Antibiotics had been switched to cefotaxime and metronidazole. Explore laparotomy had been done urgently and revealed severe intra-abdominal fecal contamination, large perforation site at 10 cm. from IC valve (Fig.1), normal stomach and others part of bowel was normal. Ileostomy with double barrel technique was performed. Histopathology revealed a tissue with ischemic injury,

transmural necrosis, and the presence of ganglion cells in both mesenteric and submucosa plexi. The baby had an uneventful postoperative recovery. The baby was intubated for 5 days, and enteric feeding was restarted 5 days after surgery. By day 19 of life, the baby reached full feeds and had been discharged from hospital at day 27 of life.

Discussion

The most common gastrointestinal emergency condition in infants is necrotizing enterocolitis (NEC), while spontaneous intestinal perforation (SIP) is increasingly seen among ELBW. Differentiating between NEC and SIP can be challenging, but various tools such as clinical presentation, risk factors, pathology, onset of symptoms, and investigations can help in guiding diagnosis in some cases.

SIP is a condition typically seen in infants born before 28 weeks of gestational age and ELBW within the first week of life, whereas NEC is more commonly seen within the first two weeks of life.⁽⁷⁾ The incidence of SIP is reported to be 1-2% in very low birthweight infants (VLBW) and 5-8% in ELBW infants.^(5, 8, 9) SIP predominantly occurs in ELBW infants (81.9%) and those born before 28 weeks of gestational age (89.9%).⁽³⁾ While in term infant, incidence of SIP is still not clear.

The etiology of SIP is still unknown, although some experts propose that factors such as ischemia, hypoxia, stress, infection, and shock could contribute to certain cases.^(5, 10, 11) While the present baby was exposed to thick meconium-stained amniotic fluid and had a true umbilical cord knot, which can restrict blood flow and nutrient supply to the fetus. Further investigation revealed signs of intestinal ischemia, particularly at the terminal ileum, likely due to regional hypoperfusion caused by reduced blood flow, possibly from a combination of factors such as fetal growth restriction, low oxygen levels, and the presence of the umbilical cord knot.

SIP is a life-threatening condition with a high mortality rate, especially in preterm infants, ranging from 40-70%.⁽¹²⁾ Management of SIP involves a combination of medical and surgical management. Medical treatment consisted of discontinuation of feeding, orogastric tube insertion with low intermittent or continuous suction, nutritional support, circulatory support, empiric antibiotics, and respiratory support^(5, 13) as in this case.



Figure 1 Intraoperative image of perforation at terminal ileum.

In general, surgical management options for SIP may involve primary peritoneal drainage and laparotomy, although the optimal approach remains controversial. In this case, the baby underwent an urgent laparotomy for 1.45 hours without any complications during the surgery. Typically, SIP tends to have better outcomes and good prognosis compared to NEC.⁽³⁾ Research has indicated that both SIP and NEC are associated with higher mortality rates and developmental impairment, but for the survivors, there are no significant differences in outcomes and neurodevelopment at 18-22 months corrected age.^(14, 15) Currently, this 4-month-old baby is showing normal development and growth curve for his age.

Conclusion

Spontaneous intestinal perforation (SIP) can present in term infants, although it is more commonly seen in extremely low birth weight preterm infants. Early detection and urgent treatment are crucial to prevent mortality. Both medical and surgical management strategies are essential in the treatment of SIP. While the prognosis for SIP is generally good with less complications compared to necrotizing enterocolitis, careful management and monitoring are necessary to ensure a positive outcome for the infant. More research is needed to better understand the etiology and risk factors associated with SIP in both preterm and term infants.

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