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Case Report

Neonatal meconium ileus: a rare presentation

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ABSTRACT

Meconium peritonitis is a non-bacterial, chemical inflammation of the peritoneum caused by antenatal or postnatal perforation of intestine by inspissated meconium. Surgery is necessary when signs of intestinal obstruction are present. The incidence of meconium peritonitis is about 1:30,000. Perinatal morbidity and mortality is about 80%. In the case of meconium peritonitis, the incidence of prematurity is 20-30 %. Author present an unusal case of meconium ileus with multiple ileal perforation leading to peritonitis.

Keywords: Intestinal obstruction, Meconium ileus, Meconium peritonitis, Neonatal ascitis, Prematurity

INTRODUCTION

Meconium ileus (MI) is defined as an obstruction caused by inspissated meconium, at the level of the terminal ileum.[1] It is a sterile chemical peritonitis resulting from a small bowel perforation in utero, possibly due to a vascular accident, intussusception, an internal bowel hernia, small intestine atresia, meconium ileus or some other unknown complication.[2-7] A secondary inflammatory reaction results in intense chemical peritonitis.[2,8] Reports of meconium peritonitis appear in the English language literature beginning in the early 20th century. [9,10]

CASE REPORT

1-day old baby presented with abdominal distension of 12 hours. No other significant history. Antenatal scans were normal except for fetal ascites (9th month IUL). O/E: vitals normal. Abdomen was distended with dilated veins, bowel sounds were absent. X-ray abdomen revealed free air in the abdominal cavity, ultrasonography revealed multiple dilated bowel loops with to and fro peristalsis. Contrast study was done which showed no leak into the abdomen, hence percuteneous needle aspiration was done which revealed bile in the peritoneum. Patient was then taken for emergency surgery.

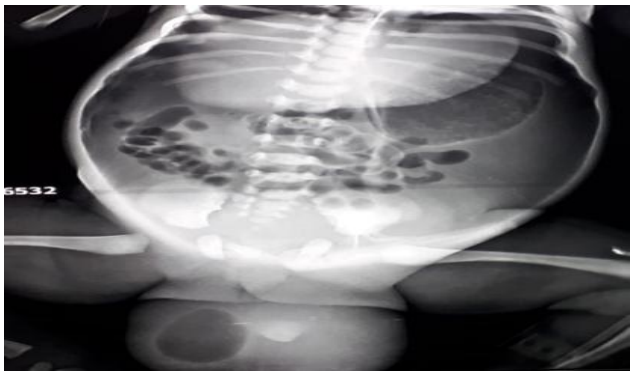

Figure 1: X-ray showed multiple dilated bowel loops.

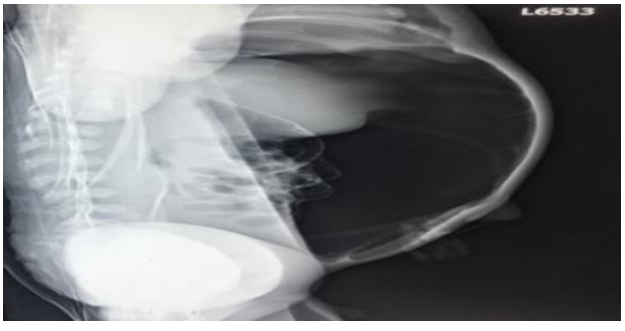

Figure 2: X-ray showed air in the abdomen.

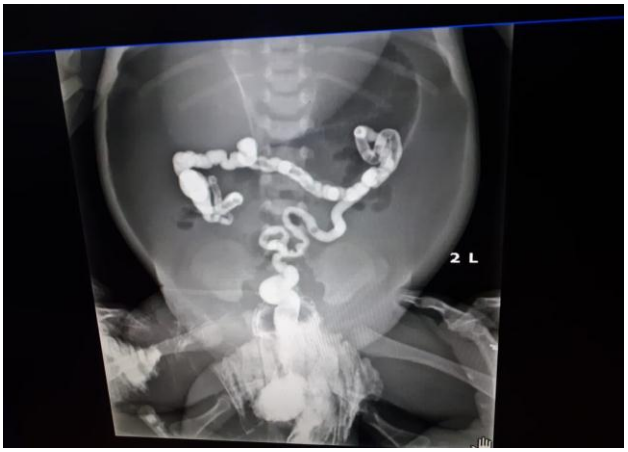

Figure 3: Contrast study shows leak of contrast from the ileum.

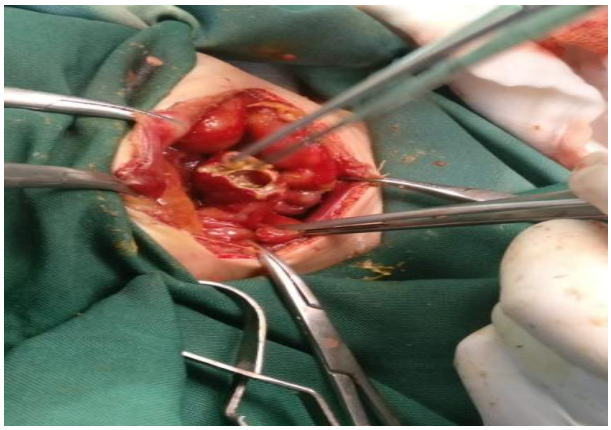

Figure 4: Multiple ileal perforation.

Intra-op finding shows multiple distal ileal perforation with meconium in the peritoneal cavity. Thorough wash given and distal ileostomy done. Rectal biopsy was done to rule out Hirschsprung's disease. Patient improved symptomatically, 60 days later ileostomy closure done with preservation of bowel continuity.

DISCUSSION

Meconium peritonitis was first detected by Morgagni in 1761, but the first surgical correction was performed successfully in 1943 by Agerty.[11] The incidence of meconium peritonitis is about 1:30,000.[12] Perinatal morbidity and mortality is about 80%. In the case of meconium peritonitis, the incidence of prematurity is 20-30%. Due to improved neonatal intensive care has resulted in a 10% decrease in mortality.[13]

Broadly, the meconium syndromes constitute a spectrum of diseases, all of which can present with neonatal bowel obstruction.[14] These may include meconium ileus, which is often associated with cystic fibrosis and can be amenable to nonoperative management with saline, contrast or N-acetylcysteine enema administration, but requires surgical intervention if such measures fail.[15]

Meconium peritonitis is classified into three groups as per the antenatal USG findings:

- Type I: large meconium ascites.
- Type II: large pseudocyst.
- Type III: Intra-abdominal calcifications, small meconium ascites and/or a shrinking pseudocyst.[16, 17]

This patient had Type I meconium peritonitis.

The most common bowel disorder which lead to meconium peritonitis in utero are those resulting in bowel obstruction and perforation such as small bowel atresia, volvulus and meconium ileus. There is usually an intense inflammation from meconium peritonitis, which may incite calcification along the surface of bowel or peritoneum. In time the inflammatory response may seal the perforation or alternatively may form a pseudocyst or wall of meconium. This pseudocyst has a thin and often calcified wall.

Prenatal ultrasound findings include ascites, intraabdominal mass, bowel dilatation and development of intra-abdominal calcification. In utero identification of meconium peritonitis by USG has important implications for obstetric and neonatal care. Postnatal outcome for such infants depend on the etiology for bowel rupture and the underlying disease.

Management and surgical strategy of a patient with meconium peritonitis rely on the clinical presentation and the overall condition of the newborn. Surgery is necessary when signs of intestinal obstruction are present. The presence of intra-peritoneal calcifications is not an indication for surgery.[16] Early recognition and treatment of acid base imbalance, superimposed bacterial peritonitis, and septic shock can prevent mortality. The timing of delivery should therefore be discussed with pediatrician and pediatric surgeon. Surgery performed within 24 hours in newborns with bowel obstruction may also improve their outcome. Literature review suggests that the need for postnatal surgical intervention varies from 20-80%.

Diagnosis of meconium peritonitis is rare before 20 weeks' because peristalsis rarely commences before this time. The first step in evaluation of the fetus with ascites and suspected meconium peritonitis is a careful survey of other aspects of fetal anatomy. If no other anomalies are identified, and the fetus is not hydropic, testing of maternal blood for antibodies to red cell determinants, cytomegalovirus, and toxoplasmosis is indicated. Postnatal diagnosis of meconium peritonitis is established after correlation of the clinical presentation with abdominal and/or scrotum radiographs, ultrasound and CT scan.[18] It may be differentiated from liver calcifications that occur in infections with cytomegalovirus and parvovirus and intestinal intra-luminal calcifications which present in the multiple

intestinal atresia, colonic atresia, or Hirschsprung's disease. A key element in the further management consists in excluding chromosomal malformations, congenital infections and cystic fibrosis.[19]

She et al studied 115 cases of meconium peritonitis over 20 years. They found that in all the cases there was intra-abdominal calcification. There was no case of fibrocystic disease. Forty-one cases had neonatal obstruction. Mortality rate in their study was 42.6%.[20]

Review of literature shows that if findings consistent with meconium peritonitis are observed in utero, the pediatrician should be alerted to look for early signs of bowel obstruction in the neonate. Surgery performed within 24 hours in such newborns with bowel obstruction may improve their outcome. However, asymptomatic infants may develop bowel obstruction secondary to adhesions later in childhood.

Infant in this case had abdominal distension with respiratory distress soon after birth with signs of intestinal obstruction, radiographic studies showed meconium peritonitis. He was managed surgically as mentioned above with an uneventful NICU stay. Meconium peritonitis may occur without any underlying cause. The underlying cause may be innocuous and intervention may not be required. However, such cases should be closely monitored for any need for an urgent surgical intervention even later in childhood.

CONCLUSION

Meconium Ileus most commonly presents with sub-acute intestinal obstruction during the first 1 week of life, but here in this case the patient presented with features of peritonitis on day 1 of life. More over the presence of fetal ascitis is suggestive of perforation during the intra-uterine life, which makes it a rare and unusual case.

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REFERENCES

1. Kayastha K, Mirza B, Sheikh A. Volvulus of small bowel in a case of simple meconium ileus. APSP J Cas Rep. 2011;2(1):7.
2. Wang CN, Chang SD, Chao AS, Wang TH, Tseng LH, Chang YL. Meconium peritonitis in utero the value of prenatal diagnosis in determining neonatal outcome. Taiwan J Obstet Gynecol. 2008;47(4):391-6.
3. Chalubinski K, Deutinger J, Bernaschek G. Meconium peritonitis: extrusion of meconium and different sonographical appearances in relation to the stage of the disease. Prenat diag. 1992;12(8):631-6.
4. Dirkes K, Crombleholme TM, Craigo SD, Latchaw LA, Jacir NN, Harris BH et al. The natural history of meconium peritonitis diagnosed in utero. J Pediatr Surg. 1995;30(7):979-82.
5. Kimber CP, MacMahon RA, Shekleton P, Yardley R. Antenatal intestinal vascular accident with subsequent small bowel atresia: case report. Ultrasound Obstetrics and Gynecology: The Offic J Intern Soc Ultrasou Obstet Gynecol. 1997;10(3):212-4.
6. Lorimer WS Jr, Ellis DG. Meconium peritonitis. Surgery. 1966;60(2):470-5.
7. Shimotake T, Go S, Tsuda T, Iwai N. Ultrasonographic detection of intrauterine intussusception resulting in ileal atresia complicated by meconium peritonitis. Pediatr Surg Intern. 2000;16(1-2):43-4.
8. Foster MA, Nyberg DA, Mahony BS, Mack LA, Marks WM, Raabe RD. Meconium peritonitis: prenatal sonographic findings and their clinical significance. Radiology. 1987;165(3):661-5.
9. DE VEL LE. Intestinal perforation with pneumoperitoneum in the new-born infant. Am J Dis Childr. 1933;45(3):587-9.
10. Thelander HE. Perforation of the gastrointestinal tract of the newborn infant. Am J Dis Childr. 1939;58(2):371-93.
11. Sabetay C, Popescu I, Ciuce C. Tratat de chirurgie–volumul III-Chirurgie pediatr. Editia a II-a. Edit Acad Romane; 2013.
12. Saleh N, Geipel A, Gembruch U, Heep A, Heydweiller A, Bartmann P, et al. Prenatal diagnosis and postnatal management of meconium peritonitis. J Perinat Med. 2009;37(5):535-8.
13. Chan KL, Tang MH, Tse HY, Tang RY, Tam PK. Meconium peritonitis: prenatal diagnosis, postnatal management and outcome. Prena Diag. 2005;25(8):676-82.
14. Hajivassiliou CA. Intestinal obstruction in neonatal/pediatric surgery. In Semi Pediatr Surg 2003;12,4:241-53.
15. Karimi A, Gorter RR, Sleeboom C, Kneepkens CM, Heij HA. Issues in the management of simple and complex meconium ileus. Pediatr Surg Intern. 2011;27(9):963-8.
16. Nam SH, Kim SC, Kim DY, Kim AR, Kim KS, Pi SY, Won HS, Kim IK. Experience with meconium peritonitis. J Pediatr Surg. 2007;42(11):1822-5.
17. Tseng JJ, Chou MM. Meconium Peri to ni tis in Utero: Pre na tal Sonographic Find ings and Clin i cal Im pli ca tions. J Chin Med Assoc. 2003;66:355-9.
18. Imagerie DU. Imagerie d'une péritonite méconiale à présentation clinique pseudotumorale. J Radiol. 1997;78:1288-90.
19. Casaccia G, Trucchi A, Nahom A, Aite L, Lucidi V, Giorlandino C, et al. The impact of cystic fibrosis on neonatal intestinal obstruction: the need for prenatal/neonatal screening. Pediatr Surg Intern. 2003;19(1-2):75-8.

20. Ya-Xiong S, Lian-Chen S. Meconium peritonitis-observations in 115 cases and antenatal diagnosis. Z Kinderchir. 1982;37(09):2-5.

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