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MECONIUM PERITONITIS ASSOCIATED WITH MECONIUM PSEUDOCYST AND INTRAPERITONEAL CALCIFICATIONS – A CASE REPORT

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ABSTRACT

Meconium peritonitis is thought to be the result of a sterile chemical reaction resulting from bowel perforation in-utero. The bowel perforates as a result of bowel obstruction that is caused by atresia or meconium ileus. A secondary inflammatory response results in the production of ascites, fibrosis, calcification and sometimes cyst. We are presenting a nine hour old neonate with abdominal distension, and scrotal swelling that were noticed at birth. Abdominal findings revealed shiny, tender, grossly distended, tensed with visible veins and multiple peri-umblical solitary firm small masses. Ascites and left cystic scrotal mass were demonstrable. Plain abdominal X-ray showed dilated bowel, pseudocysts, calcifications and ground glass appearance, while abdomino-pelvic ultrasound showed calcifications and ascites. Intraoperative findings revealed perforation of terminal ileum about 3-5cm from ileocaecal junction with areas of calcifications. Limited right hemicolectomy with adhesiolysis was offered.

Keywords: Meconium Peritonitis, Meconium Pseudocyst, Intraabdominal Calcifications, Neonate

INTRODUCTION

Meconium peritonitis (MP), a rare sterile chemical peritonitis resulting from bowel perforation in utero is seen in approximately 1 in 35,000 neonates **[1]**. Causes of bowel obstruction like atresia, volvulus, intussusception, bands and meconium plug syndrome have been linked with MP **[2]**. Birth *et al.*, in 1961, **[3]**, however, remarked

that in some cases of MP, perforation occurs before an obstruction and obstruction may be absent in others **[3]**. Other causes of MP include fetus-in-fetu and perforations caused by cytomegalovirus and parvovirus B19 infection **[2, 3]**. Meconium pseudocyst and calcifications results when the meconium persists in a localized collection and is walled off **[4]**. At least four types of MP are recognised: fibro-adhesive, cystic, generalized or healed **[5]**. Early diagnosis and prompt surgical intervention is critical to survival of patients. Abubakar et al in Nigeria, in 2008 reported that MP exceeding 24 hours without intervention has a bad outcome **[2]**. Due to the rare nature of MP, there is dearth of information on it in Nigeria and on the African continent **[2]**. In this report, we described postpartum sonographic and radiographic findings in a neonate with MP, meconium pseudocyst and calcification at Federal Medical Centre Yola (FMCY), Adamawa State, Nigeria.

Case Report

The patient is a nine hour old term male neonate who was delivered via spontaneous vaginal delivery at a primary Health Centre (PHC) in Fufore local government area of Adamawa State. Mother is a 37 years old multipara. Patient was referred to FMCY because of abdominal distension and Scrotal swelling that was noticed at birth. Pregnancy was booked at PHC in Fufore at four months gestation and mother was regular with antenatal visits. Pregnancy was characterized by maternal febrile illness, per vaginal discharge and genital itch for which medical help was given. Patient APGAR score was not included in the referral, but child cried immediately after birth. He is the last of eight children in a monogamous family with no family history of birth defects. Mother is unemployed with no western education and father is a subsistent farmer.

Child was acutely ill looking, febrile with temperature of 37.5 degree celsius and weigh 3kg, however, no dysmorphic fascies. Abdomen was shiny, tender, grossly distended, tensed, with visible veins and multiple peri-umblical firm solitary small masses. Ascites and left cystic scrotal mass were demonstrable. Child was tachypnoeic with respiratory rate of 88cycles/minute, breathe sounds were vesicular, with crepitations mostly on the posterior interscapular region. Initial diagnosis of Peritonitis with multiple intra-abdominal masses in a child with cystic left scrotal swelling was made. Plain abdominal X-ray showed dilated bowel, pseudocysts, calcifications and ground glass appearance **(Figure 1)**. Abdomino-pelvic Ultrasound also

revealed calcifications and ascites. On exploratory laparotomy, perforation of terminal ileum about 3-5cm from ileocaecal junction with areas of calcifications were found **(Figure 2)**; limited right hemicolectomy with adhesiolysis was offered. Patient was also placed on cefuroxime, metronidazole, gentamicin and intravenous fluids. He also had intra-operative blood transfusion.

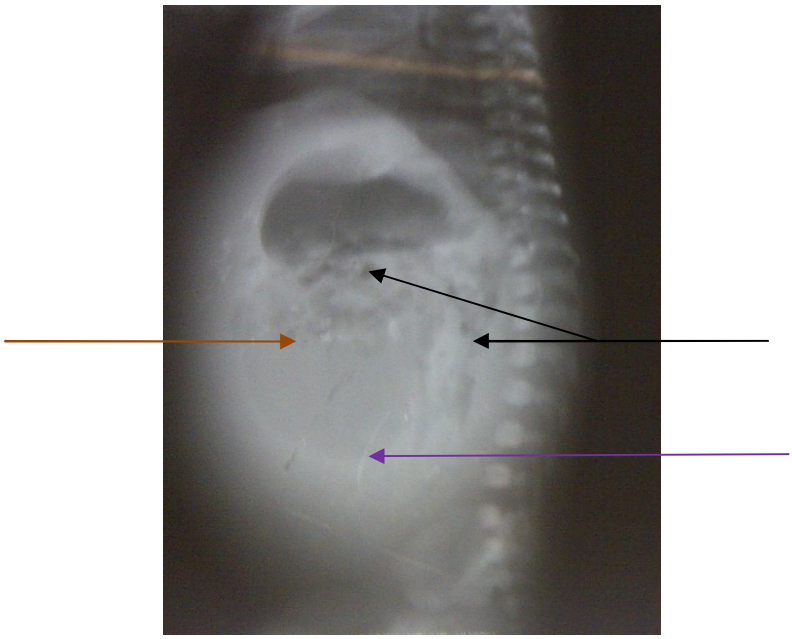

Figure 1: Abdominal Radiograph (Black Arrow Points to Pseudocysts, Brown Arrow Indicates Calcification and Purple Arrow Shows Ground Glass Appearance of the Abdomen)

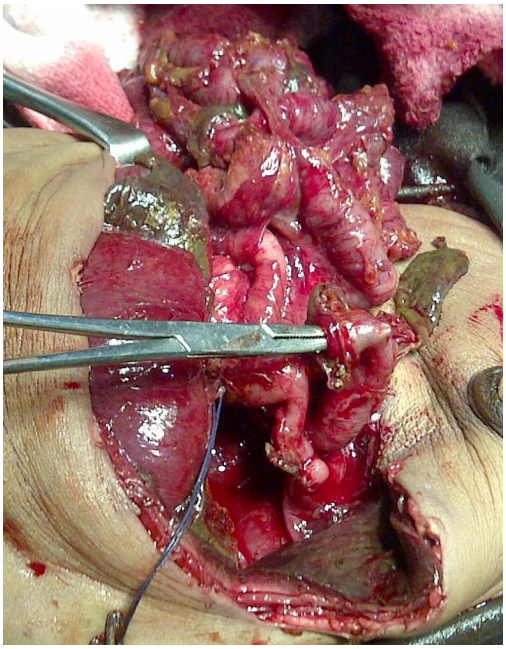

Figure 2: Laparotomy Image Showing Calcified Areas and Adhesions

DISCUSSIONS

Meconium peritonitis should be considered when echogenic areas are seen within the fetal abdomen from second trimesters of pregnancy or in the neonate after delivery. Although this condition is rare, the actual frequency may be higher since some cases occurring in utero may resolve or may be clinically inapparent at delivery. **[1, 3]** Our patient presented with ascites, pseudocyst and calcifications, which could have resulted from sterile chemical reaction due to bowel perforation in utero as observed by previous authors **[1-5]**. The end result of the process varies leading to four descriptive categories of meconium peritonitis: fibroadhesive, cystic, generalized or healed **[5]**. Our patient most likely had mixed category, fibroadhesive inclusive for which adhesiolysis formed part of the surgery. Eighty-six percent of fetuses with MP have intra-abdominal calcifications and research has indicated that, it takes at least eight days after meconium has escaped into the peritoneal cavity before calcifications are detected **[6]**. With this in mind, it can be argued that the calcifications that were found on our patient were formed in utero, but due to lack of facilities at the PHC, it was not detected during ANC visits. Up to 50% cases of MP are caused by ischemic lesions of the small bowel associated with mechanical obstruction; however, viral causes have also been documented **[1, 2]**. The possibility of the latter in our patient cannot be totally excluded because maternal ill health was reported at the time of pregnancy. Meconium ileus accounts for less than 25% of cases of MP and are linked to cases developing after delivery, mostly associated with cystic fibrosis **[1]**. This is highly unlikely in our patient because trend of events possibly originated from in-utero rather that ex-utero. More so, our patient is of negroid race among whom cystic fibrosis is rare. Furthermore, cystic fibrosis is an autosomal recessive condition, which means that other siblings of the patient could be prone to the disease. His other siblings are well; this rules out the possibility of cystic fibrosis and downplays meconium ileus as the cause of MP in our patient.

Of emphasis is that our patient demonstrated the typical findings expected in a case of natural MP. Ultrasound descriptions were that of hyperechoic echoes in the abdominal cavity, and the scrotal sac. In addition, ascites, bowel distention and meconium pseudocyst appearing as cystic mass with an irregular calcified wall **[7]**. There is a dearth of information regarding the natural history of meconium peritonitis, with or without pseudocyst because some cases could resolve in utero. Unless the fetus develops rapidly

progressive ascites most authors recommend expectant management **[8]**. Tensed rapidly progressive ascites leading to difficulty in breathing was evidenced in current case. Perforation in cases of MP may seal off completely in utero, or may seal off in the neonatal period, or may require surgical repair **[1, 2, 6]**. Our patient fell in the latter category due to non sealing off with continuous leakage from the perforated ileal site.

CONCLUSION

Meconium peritonitis is not a common finding in newborns, however, babies presenting with tensed abdomen, firm abdominal masses with pseudocysts and calcifications at birth should be evaluated for MP.

RECOMMENDATION

Late intervention of cases of MP are associated with high fatalities, thus we recommend early case management of MP in order to improve the quality of life of affected babies.

AUTHORS' CONTRIBUTIONS

BUA performed clinical audit of the patient. BUA, OO, AIA and YI collected and analyzed the data. BUA, AA and HIB analyzed the images, however, all authors drafted and approved the final manuscript.

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