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자궁내 장중첩증에서 기인한 태변성 복막염 1예

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Meconium Peritonitis Associated with Intrauterine Intussusception: A Case Report

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Meconium peritonitis is a sterile inflammatory reaction to the meconium in the fetal abdomen as a result from the intestinal perforation. With some characteristic signs of meconium peritonitis, the prenatal diagnosis has been increasing. In most cases, the meconium peritonitis may resolve spontaneously. But intussusception is a surgical emergency. Nonetheless, the diagnosis is hard to make prenatally due to lack of the experience about this disease in utero. We report a case which is managed under the diagnosis of meconium peritonitis and intussusception has been confirmed by the surgical findings.
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Key Words: Meconium peritonitis, Intrauterine intussusception, Meconium plug syndrome, Fetal ascites

Meconium peritonitis is a sterile inflammatory reaction in the fetal abdomen when the meconium leakages from the perforation in the fetal intestines. Recently, there have been increasing numbers of fetuses with meconium peritonitis prenatally diagnosed by ultrasonography. Fetal ascites can be complicated in some cases of the meconium peritonitis and it may lead to the fetal hydrops and/or hypoplastic lungs. However, fetal ascites induced by intrauterine intussusception without the evidence of perforation is rare.

We report herein a case of fetal meconium peritonitis originated from intrauterine intussusception which was confirmed by surgery underwent after delivery.

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Case report

A 25-year-old pregnant woman was referred to our hospital at 30 weeks and 6 days of gestation after prenatal ultrasonographic findings of massive fetal ascites, performed at an outside facility. Ultrasonography performed in our hospital showed fetal ascites, hyperechogenic bowel and right scrotal fluid collection suggesting meconium peritonitis and fetal hydrops (Fig. 1). Repeated fetal paracenteses were performed at 31 weeks and 32 weeks to halt the progression of fetal hydrops and to prevent hypoplastic lung by decreasing fetal abdominal pressure. At 33 weeks of gestation, the baby was delivered by cesarean section due to poor score of biophysical profile and increased peak systolic velocity of median cerebral artery (MCA PSV) (Fig. 2).

The newborn, a male weighing 2,200 g, presented grossly normal appearance with Apgar 5 at first minute and 8 at fifth minute. There was no abnormal finding on abdominal

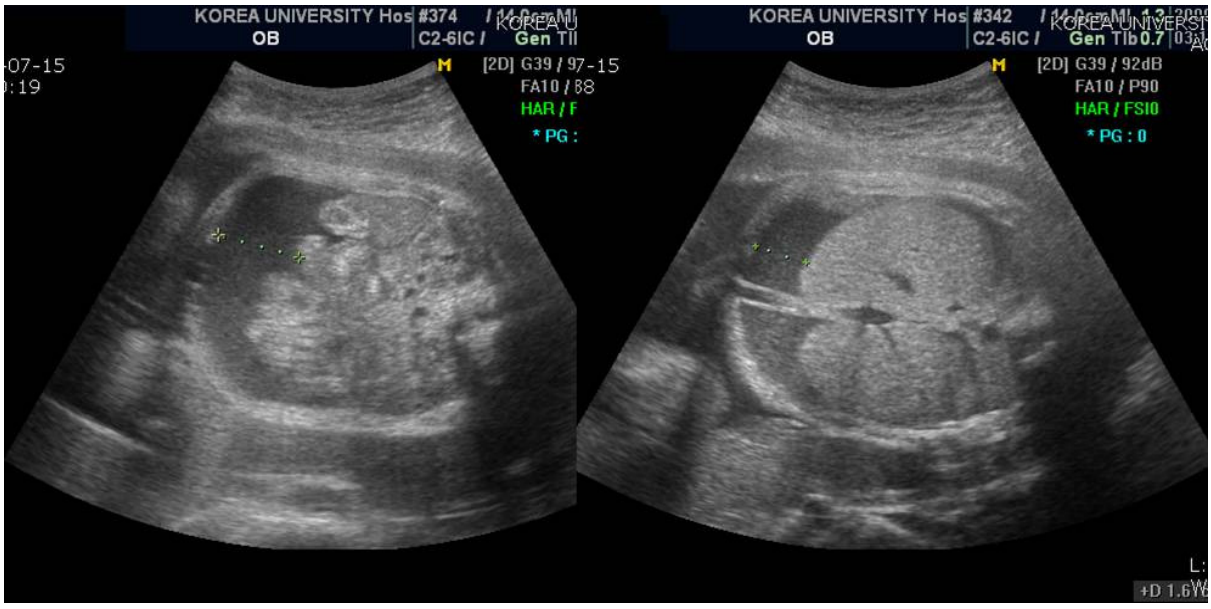

Fig. 1. Ultrasonography performed at 30 weeks 6 days of gestation shows massive ascites with focally increased bowel echoes.

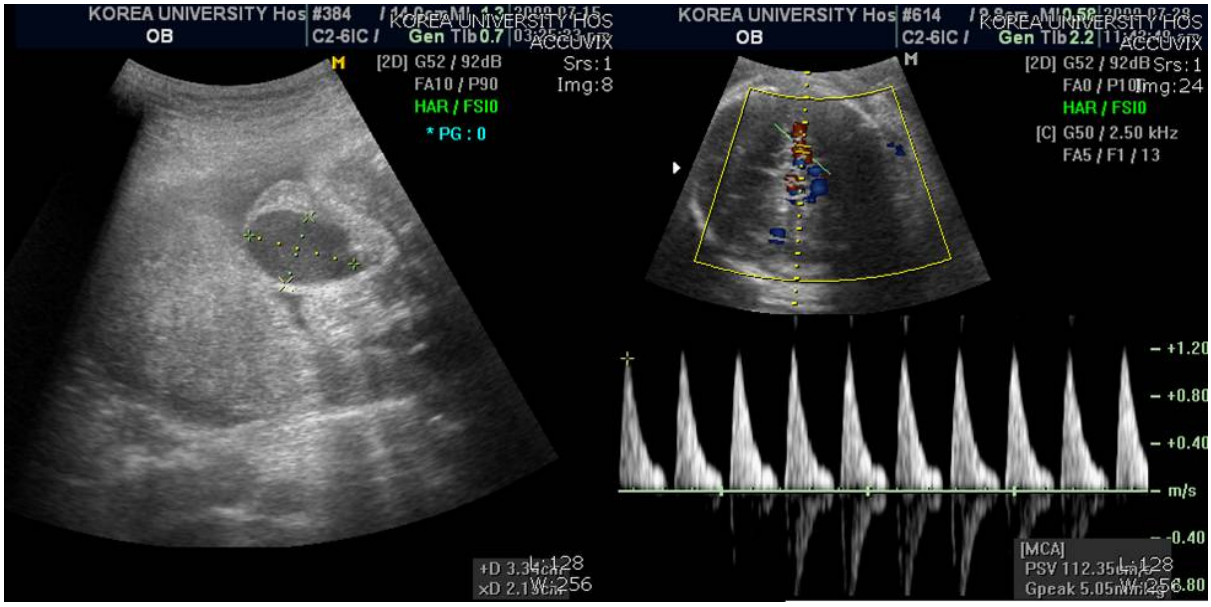

Fig. 2. Ultrasonography at the 30 weeks 6 days of gestation shows scrotal swelling and increased peak systolic velocity of the median cerebral artery (MCA PSV).

sonography and upper GI barium radiography. However, feeding difficulty remained as a main problem of the baby until two weeks after birth. Lower GI barium radiography revealed incomplete rotation abnormality of bowel (Fig. 3). Laparotomy was performed in Pediatric surgery department.

In operative finding, necrotic material consisted of meconium was spread in whole abdominal cavity and small bowel rotation due to adhesion was discovered. Intussusception by meconium plug was confirmed in the proximal bowel loop (Fig. 4). Ileal segmental resection and double barrel ileostomy was performed.

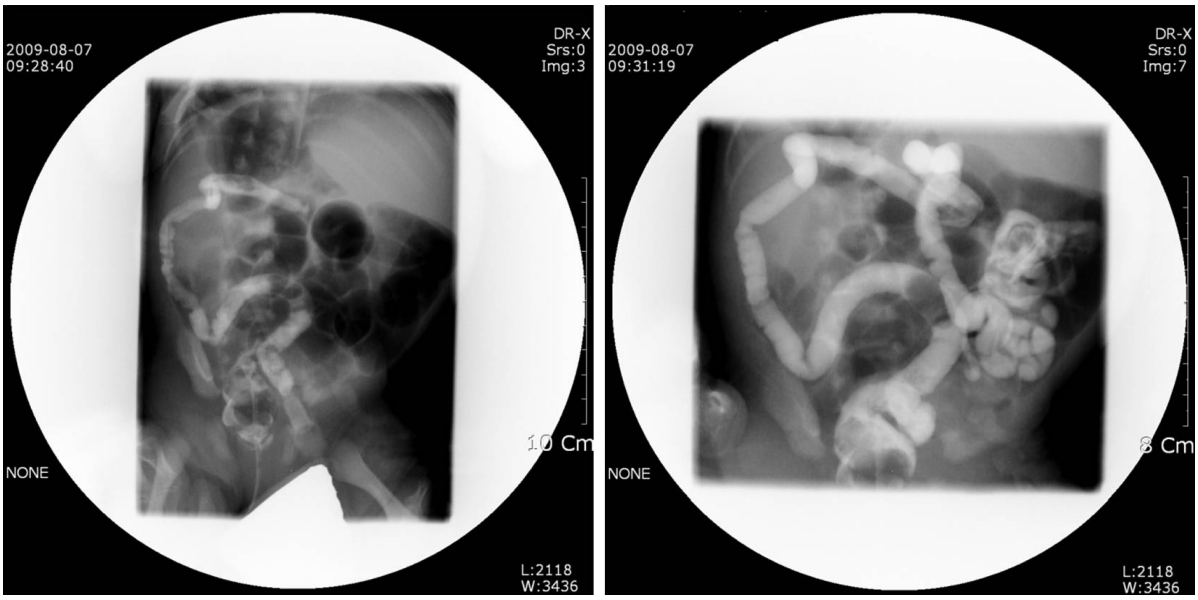

Fig. 3. Postnatal barium enema suggesting intestinal malrotation.

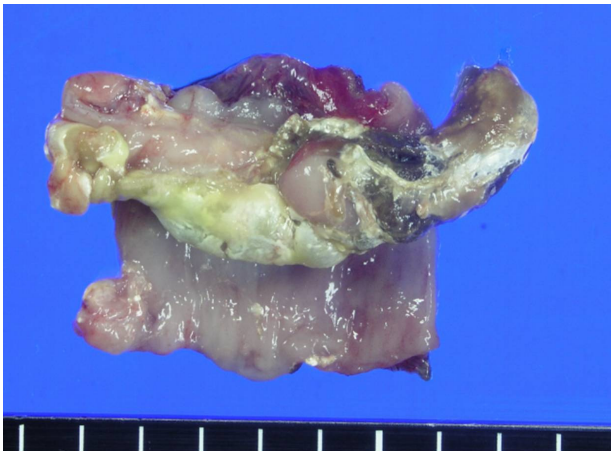

Fig. 4. Segmentally resected small intestine diagnosed as intussusception. The lumen is packed with the meconium.

17 days after the first operation, the baby had ileostomy repair and discharged without any specific complication.

Discussion

Meconium peritonitis can be considered when ultrasonographic findings reveal hyperechogenic areas within the fetal abdomen. It is thought to be caused by the sterile chemical response to leakage from the bowel perforation, which usually occurs in the proximal portion of the intestinal obstruction. The intestinal obstruction might arise as a consequence of the intestinal atresia, volvulus, Meckel's diverticulum, imperforated anus and intussusception.[1] With widespread use of the ultrasonography, the prenatal diagnosis of meconium peritonitis has been increasing. The incidence of the meconium peritonitis has been reported to be of 1 in 35,000 live births.[2] The sonographic findings associated with the meconium peritonitis are intra-abdominal calcifications, bowel dilatation, ascites, polyhydramnios and fetal hydrops.

Intussusception is primarily a disease of children but in preterm infants, it is a rare disorder.[3] Intussusception shows sonographic features such as doughnut sign of alternating hypo- and hyperechoic rings and a crescent-in-doughnut sign of a hyperechoic crescent layered around a central mass. But these signs can be rarely detected by prenatal ultrasonography and so it is difficult to characterize intrauterine intussusception by specific prenatal ultrasonography.[4] Shimotake et al. reported a case of prenatally diagnosed intussusception by the target-like appearance in the fetal abdomen sonographycally.[5] Although this case didn't show any specific findings in ultrasonography, this target-like appearance in the fetal abdomen and the presence of signs which suggest the meconium peritonitis including ascites may be helpful to make early diagnosis of intussusception.

Gastrointestinal disorders, such as diaphragmatic hernia,

midgut volvulus, gastrointestinal obstructions and meconium peritonitis, can cause ascites and hydrops fetalis, in severe cases. This is thought to be resulted from hypoproteinemia.[6] Although the majority of intestinal perforation may be closed and the meconium ascites is absorbed spontaneously, severe ascites may lead to fetal hydrops and polyhydramnios.[7] In these cases, paracentesis may be necessary to prevent pulmonary hypoplasia, preterm delivery or intrauterine fetal death. Shyu et al. reported that paracentesis may reduce the inflammatory response by eliminating the debris and improve the mesenteric vascular supply by lowering fetal intraabdominal pressure.[8]

In our case, we performed serial fetal paracenteses for the lung development by decreasing fetal abdominal pressure and continued fetal surveillance using ultrasonography (the amount of ascites, MCA PSV etc.), nonstress test or biophysical profile if necessary. And we performed cesarean section due to the decreased biophysical profile prompting immediate delivery. Fetal ascites itself is not the absolute contraindication for vaginal delivery.[9] But, the physicians should be aware of the possibility of the abdominal dystocia. For the vaginal deliveries, paracentesis before delivery may be helpful.[1,10]

The lack of characteristic features in prenatal ultrasonography, rarity of disease and the nonspecific symptoms and signs make it difficult to diagnose the neonatal intussusception in early stages. The presence of the ultrasonographic signs suggesting meconium peritonitis with massive ascites or fetal hydrops may warn the physicians the possibility of fetal intestinal disorders including intussusception. Because intussusception is one of the surgical emergencies, obstetricians should keep in mind this disease as a differential diagnosis when ascites is found in prenatal ultrasonogram.

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국문요약

태변복막염은 태아의 장천공에 의한 태변 누출로 인해 복강 내에서 발생하는 무균성 염증반응이다. 최근에는 초음파상 나타나는 몇 가지 특징적인 소견에 의해 태변복막염을 산전에 진단하는 예가 증가하고 있다. 태변복막염은 대부분의 경우 자발적으로 호전되는 양상을 보이게 되나 장중첩증은 외과적인 응급질환이다. 그럼에도 불구하고 자궁 내 태아에서 발생한 장중첩증의 경우는 보고된 바가 드물고 특징적인 초음파 소견을 찾기도 어려워 산전에 진단을 내리기가 힘든 상황이다. 저자들은 산전에 태변복막염을 진단하여 치료하고 분만 후 수술 소견 및 병리학적으로 확진된 장중첩증을 경험하여 간단한 문헌고찰과 함께 보고하는 바이다.

중심 단어 : 태변성 복막염, 자궁내 장중첩증, 태변마개증후군, 태아 복수