Meconium periorchitis: A case report and literature review

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Abstract

Meconium periorchitis (MPO) is an uncommon entity associated with healed meconium peritonitis. The typical presentation is a soft hydrocele at birth which becomes harder in weeks as the meconium calcifies. A lack of awareness of this rare disease may lead to unnecessary surgery of scrotal masses. It can resolve spontaneously without compromising the testicle. Scrotal ultrasound is the mainstay of imaging and abdominal plain film is less sensitive but can help in the diagnosis. We report a case of a meconium periorchitis and discuss its radiological and histological features. We also review the relevant literature.

Introduction

Meconium periorchitis (MPO) is an uncommon benign cause of a scrotal mass in the newborn. In utero bowel perforation can be caused by thickened meconium associated with cystic fibrosis, bowel atresia, volvulus or vascular compromise. Leakage of meconium into the peritoneum causes meconium peritonitis (MP). Some bowel perforations heal without obvious sequelae and the baby appears well at birth. Meconium reaching the paratesticular soft tissue through a patent processus vaginalis causes a scrotal mass. The typical presentation is a soft hydrocele at birth which becomes harder in weeks as the meconium calcifies. Both the masses and the calcifications have the tendency to resolve spontaneously without compromising the testicle. It mimics a scrotal mass, and without knowledge of this rare disease, it may lead to unnecessary surgery.

Radiologic evaluation with ultrasonic features and plain abdominal film may provide findings enough to suspect MPO. A normal testicle with this tumour-like lesion can differentiate it from scrotal tumours.

Case report

We report a 2-month-old healthy term boy who was delivered normally after an uneventful pregnancy. The parents noticed a hydrocele for which case he was brought to the pediatric unit. A painless left scrotal mass was noted incidentally. The baby looked well and was feeding well; his scrotal mass was hard and localized, bilateral and clearly separable from the testis on examination and not tender to touch. The patient had normally descended testes and did not have any difficulty in the neonatal nursery, such as delayed passage of meconium or signs of bowel obstruction.

There were no signs of tenderness or erythema. According to the medical records, intrauterine ultrasonography at 20 weeks of gestation did not highlight any abnormality within the scrotal area.

Clinical laboratory studies, including urea and electrolytes, liver function test, serum alpha-fetoprotein and beta-hCG, were unremarkable.

Ultrasound scans during his admission demonstrated testes which were normal in shape, size and echopattern, with the right testis located within the inguinal canal. Within the right scrotum there was a mixed echogenic mass measuring 3.2 × 1.4 × 1.9 cm. Doppler flow was noted within this mass. There was also a smaller mass on the left side measuring 1 × 0.9 × 0.9 cm. Both kidneys were also scanned and were normal on ultrasound.

The patient was assessed in the urology clinic for 8 weeks after his first admission, with no resolution of these bilateral testicular masses, although it was thought that the peri-mass inflammation was settling. To clarify the matter, he underwent scrotal exploration. Intra-operatively, we found a circumscribed, firm paratesticular mass, which was adherent to the tunica vaginalis. The dissection was accomplished with some difficulty, as the patient also had a right inguinal herniotomy and orchidopexy. The postoperative course was uneventful. The boy was discharged the next day.
Gross pathologic appearance confirmed a right oval soft lump measuring $2 \times 1.5 \times 1$ cm. The mass was finely calcified and had a variagated pale green cut surface. On the left side, an oval mass measured $1.5 \times 1 \times 0.3$ cm with similar morphology to the right-sided sample (Fig. 1).

Microscopically the tissue composed of lobules of fibroconnective elements with abundant myxoid stroma, dystrophic calcification with scattered hemosiderin-laden macrophages, multinucleated giant cells and occasional squamous cells. These are the features of MPO (Fig. 2a, Fig. 2b).

**Discussion**

MPO was first described by Olnick and Hatcher in 1953 in an infant with scrotal and peritoneal calcification.\(^5\) It is a rare condition in infant boys who have had healed meconium peritonitis. The patient’s age at the time of diagnosis of the associated mass varies, but patients typically present in the first months of life, but MPO has been reported in children up to 5 years old.\(^6\)

Meconium is the greenish, viscous intestinal content of the distal small bowel present after the fourth month of fetal life. It contains swallowed amniotic fluid, bile salts, bile pigments, cholesterol, mucin, pancreatic enzymes, intestinal enzymes, squamous cells, lanugo hair and other cellular debris.\(^7\)

Meconium peritonitis occurs when a bowel wall rupture occurring during late fetal life or early postnatal life allows meconium to enter the peritoneal cavity. This may be associated with volvulus, bowel atresia or mesenteric vascular insufficiency. If the ruptured bowel wall heals, there may be no evidence of the cause or the site of perforation. This is called meconium peritonitis.\(^8\)

Passage of the meconium through the patent processus vaginalis may result in MPO and the mass-like lesion arises because of an inflammatory reaction from meconium within the scrotal sac. The patent processus vaginalis is an evagination of the peritoneum from the ventral abdominal wall into the inguinal canal formed as the testis descends into the scrotum in the seventh month of gestation. The consistency and appearance of meconium in the scrotum evolve over time. The soft extratesticular mass at birth eventually hardens and becomes partially calcified.\(^9\)

Our case represents a common clinical MPO in which the infant is clinically well, apart from the scrotal mass which is initially thought to be a hydrocele. Within weeks, the mass

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**Fig. 1.** Meconium periorchitis (gross appearance).

**Fig. 2a.** Lobules of fibroconnective tissue with abundant myxoid stroma.

**Fig. 2b.** Hemosiderin-laden macrophages and dystrophic calcification.
calcifies and becomes hard, raising the suspicion of a neo-
plastic process of testicular or paratesticular tissue, par-
icularly if firm and non-tender. Calcification at birth suggests
that the perforation occurred earlier in gestation. Meconium
in the peritoneal cavity initiates sterile, chemical foreign
body peritonitis and causes foreign-body giant-cell reaction,
chronic inflammation and, finally, scarring.\textsuperscript{7} Peritoneal cal-
cifications follow and these classified masses in the scrotum
can slowly resorb and do not require excision.\textsuperscript{10}

Ultrasonography represents the favoured imaging tech-
nique due to it is ability to differentiate between the extra
or intra testicular masses. Since most extra-testicular lesions
are benign, while most intra-testicular lesions are malignant,
it is important to perform a preoperative ultrasonographic
examination. On the other hand, abdominal radiographs
may help to detect calcifications, it is absent in 10\% of
cases.\textsuperscript{10}

It has been reported that 13\% of cases had other congeni-
tal anomalies, including scrotoschisis, hypospadias, ompha-
locele and esophageal atresia. Cystic fibrosis, causing an
thickened meconium and in utero bowel perforation, has
been associated with MPO in 9\% of cases, compared to
meconium peritonitis, which included scrotal masses with
calcifications, hydroceles and absence of blood flow to the
peritesticular mass on Doppler studies.\textsuperscript{11} Our case did

demonstrate blood flow to the peritesticular mass, which shows
that it may not always be possible to manage these patients
conservatively as histological confirmation is needed in such
cases. However, we have to acknowledge that ultrasound
is an operator dependant procedure and variations do exist.

### Role of ultrasound

If present, sonographic findings of meconium peritonitis may
help clarify the diagnosis. However, a triad of sonographic
findings has previously been described in patients with
meconium peritonitis, which included scrotal masses with
calcifications, hydroceles and absence of blood flow to the
peritesticular mass on Doppler studies.\textsuperscript{11} Our case did

### Conclusion

When a peritesticular mass with calcifications and hydro-
celes is found on prenatal sonography, it is important to
consider MPO and search for signs of meconium peritonitis.
Atypical cases do occur, in which surgical exploration and
histological confirmation are still warranted.

### Competing interests

None declared.

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