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Case Report

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Scrotal Abscess Following Emergency Laparotomy in a Preterm Infant

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We report one rare case of scrotal abscess following an emergency laparotomy in a preterm infant. A male infant was born by cesarean section due to twin pregnancy at 34 weeks of gestation. He underwent emergency laparotomy for pneumoperitoneum caused by a gastric perforation. At 10 days after the surgery, he presented with bilateral scrotal swelling and ill-defined infiltrating lesions in both testicles. Ultrasound confirmed both patent processus vaginalis. Scrotal incision revealed a yellow mass attaching to both testicles, which was finally diagnosed as abscesses. This case highlights the importance of considering scrotal abscess as a potential complication following intestinal perforation and postoperative intraperitoneal infections in newborn infants.

Keywords: Laparotomy, Preterm infants, Scrotal abscess

Introduction

Scrotal abscess is a rare complication that can occur following an abdominal surgery, especially in preterm infants. The spread of intraperitoneal infection through the patent processus vaginalis has been suggested as a possible mechanism for scrotal abscess formation [1]. Scrotal abscess belongs to the category of acute scrotum. It is rarely caused by hematogenous spread of sepsis or urinary tract infection [1,2]. Another possible route of infection is that intraperitoneal infection might spread to the scrotum through the patent process vaginalis [1,3]. However, there have been only a few case reports of scrotal abscess following laparotomy in preterm infants. We present one rare case of scrotal abscess following emergency laparotomy in a preterm infant.

Case report

A male infant was born by cesarean section due to twin pregnancy at 34 weeks of gestation. The baby weighed 2,060 g at birth. He was fed preterm formula. About 3 days after birth, after achieving full enteral feeding, he showed sudden grunting and abdominal distension. Simple X-ray findings showed pneumoperitoneum (Fig. 1). An emergency laparotomy was performed. Surgical findings showed a linear rupture of 8 cm along the great curvature in the body of the stomach. Primary repair for the perforation was performed. Judging from blood test results on the day of surgery (hemoglobin: 14.1 g/dL, leukocytes: 990 cell/μL, platelets: 124,000/μL, prothrombin time: 30.4 seconds, activated partial thrombin time: 125.8 seconds), vitamin K administration and fresh frozen plasma A blood transfusion were performed. However, anemia and thrombocytopenia persisted at 7 days after surgery, leading to red blood cell and platelet transfusions. After that, the patient's blood tests returned to

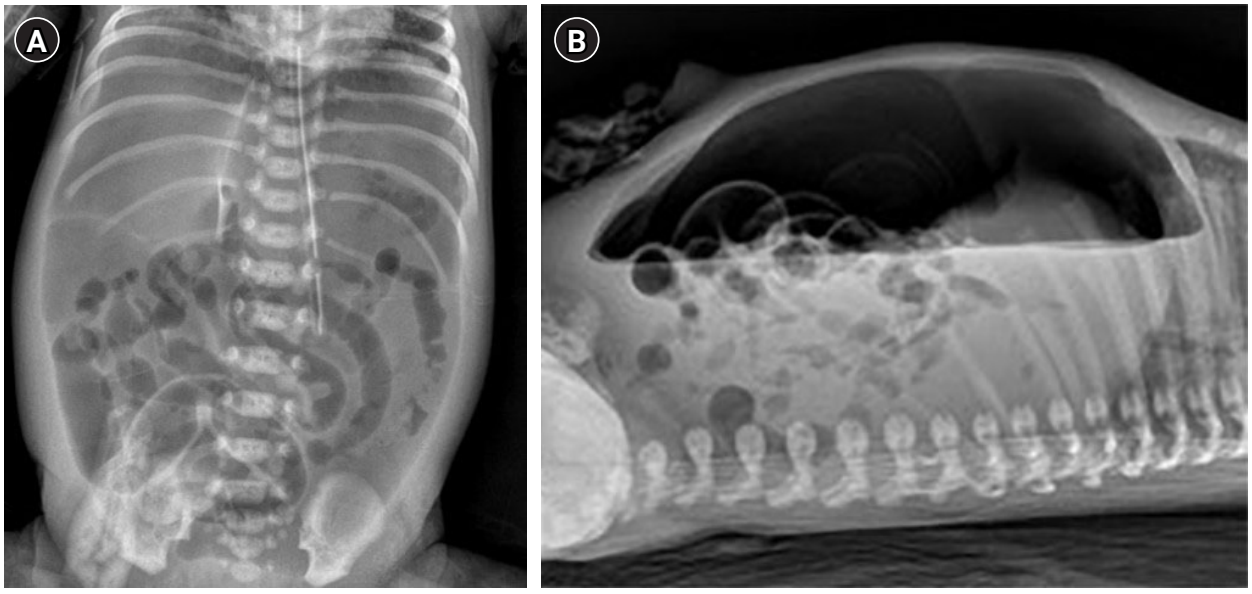

Fig. 1. Finding of abdominal x-ray showing pneumoperitoneum. (A) Anterior posterior supine view and (B) trans-lateral view.

Fig. 2. Bilateral scrotal swelling without color change of skin.

normal. Fasting was maintained until 10 days after surgery. Cefotaxime was administered for 3 days and vancomycin was administered for 10 days.

At 10 days after the surgery, both scrotal swelling developed progressively without showing fever or color change (Fig. 2). Physical examination revealed that both scrotums were edematous with tenderness. There was no skin abrasion over the scrotum.

Ultrasound findings showed bilateral scrotum enlargement and ill-defined infiltrating lesions in both testicles and confirmed both patent processus vaginalis (Fig. 3). In laboratory findings of the patient, complete blood count showed normal leukocyte count. C-reactive protein was elevated to 1.1 mg/dL. However, no pathogen was identified in blood or urine culture.

Although the possibility of testicular torsion existed, scrotal incision was performed because surgical problems such as testicular adrenal rest tumors and scrotal abscesses were not excluded. During surgery, the yellowish mass attaching to both testicles was excised. Finally, the mass turned out to be abscess on histopathological examination (Fig. 4). Bacterial culture tests were not performed on excised specimens. For testicular abscess, cefixime as an oral antibiotic was administered for 10 days. On follow-up, the patient's scrotal swelling improved without recurrence.

Discussion

Development of scrotal abscesses following intestinal perforation and emergency laparotomy is a rare complication in preterm infants, with few cases reported in the literature. Early diagnosis and operative intervention of scrotal abscess are mandatory to avoid complications such as possible testicular gangrene [4].

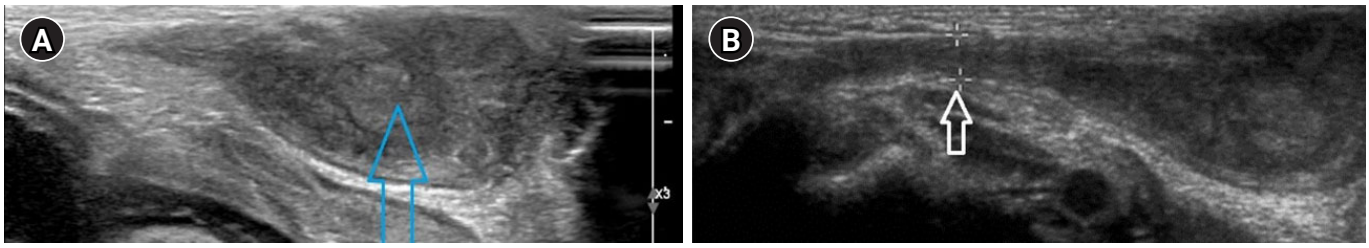

Fig. 3. Ultrasonographic findings showing bilateral scrotum enlargement, (A) Ill-defined infiltrating lesions in testis (blue arrow). (B) Patent processuss vaginalis (white arrow).

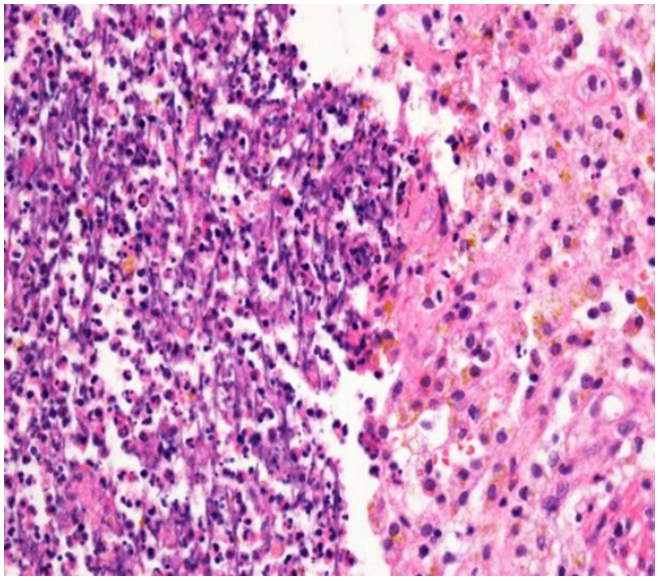

Fig. 4. Microscopic findings suggestive of testicular abscesses (H&E stain, X400).

Scrotal abscesses can be contaminated by urinary tract infections or by hematogenous spread of bacteria [1,2]. Another possible route for infection is from the peritoneal cavity in case of intraabdominal infections through a patent processus vaginalis [1,2]. Several possible routes have been proposed to explain the relationship between scrotal abscess and retroperitoneal space infection [5]. Cope described findings from biopsy and surgical specimens of scrotal abscesses that might have originated from retroperitoneal infection [6].

We reviewed several previous cases of scrotal abscess and found that they all had pus originating from the peritoneal cavity [7-9]. A patent processus vaginalis is more common in preterm infants. It might serve as a pathway for infection spread from intraperitoneal infections [1,10,11]. The testis develops as a part of the abdominal cavity at about 9 weeks of gestation. It descends into the scrotum via the processus vaginalis. Thus, the processus vaginalis serves as a window of communication between the peritoneum and the scrotum until its eventual closure [12]. It has been estimated that approximately 80% to 90% of newborn males have a patent processus vaginalis [13]. Another possible hypothesis is that when testicular blood supply derived from the retroperitoneal space moves through the spermatic cord, abscess from the retroperitoneal space might have caused direct propagation through the associated blood supply.

In the present case, a preterm infant developed a scrotal abscess following emergency laparotomy for intestinal perforation potentially due to the spread of infection via the patent processus vaginalis. We recommend careful surveys of peritoneal origins before scrotal exploration, especially in preterm infants.

In conclusion, we report a rare case of scrotal abscess following emergency laparotomy in a preterm infant. Spread of intraperitoneal infections through the patent processus vaginalis might be the mechanism for scrotal abscess formation. Such rare occurrence of scrotal abscess following emergency laparotomy in a preterm infant highlights the importance of considering scrotal abscess as a possible complication in patients with intestinal perforation. Clinicians should be aware of the potential for infection spread via the patent processus vaginalis and consider it in the differential diagnosis when encountering scrotal swelling in preterm infants following an abdominal surgery.

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None.

Ethics approval

This case was reviewed and approved by the Institutional Review Board (IRB) of Keimyung University Dongsan Hospital (IRB No. 2023-06-041). The requirement for informed consent was waived by the IRB.

Conflict of interest

The authors have nothing to disclose.

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