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Sepsis presenting as an acute purulent neonatal epididymo-orchitis: case report

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Epididymitis, epididymo-orchitis, and infected hydrocele are uncommon in the neonatal period. It is very important to differentiate these entities from testicular torsion to salvage the affected testis and avoid unnecessary surgical exploration. Escherichia coli is an important and common cause of sepsis in neonatal period and also a common bacterium causing epididymo-orchitis from ascending route. We report a case of a newborn affected with epididymo-orchitis caused by early onset Escherichia coli sepsis. It is difficult to differentiate epididymo-orchitis from testicular torsion in neonatal period because the clinical signs of testicular torsion and epididymo-orchitis are similar. Color Doppler ultrasonography has an important role in differentiation of testicular torsion from epididymo-orchitis. In spite of clinical signs and ultrasonography, in some cases surgical exploration cannot be avoided to confirm the accurate diagnosis.

Keywords: epididymitis; sepsis; spermatic cord torsion; *Escherichia coli;* infant, newborn; ultrasonography, doppler, color

INTRODUCTION

Acute scrotal swelling is not uncommon in the neonatal period. This entity includes testicular torsion, orchitis, incarcerated inguinal hernia, epididymo-orchitis, hydrocele, scrotal hematoma, and tumors (1, 2). Testicular torsion requires prompt surgical intervention, but epididymo-orchitis is treated medically. It is very difficult to differentiate testicular torsion and epididymo-orchitis in neonates and young infants because the initial manifestation of both entities is similar. Retrograde passage of sterile or infected urine along the patent vas deferens is one of the causes of epididymo-orchitis (1). Hematogenous infection is one of the most common causes of epididymo-orchitis in the neonatal period (*Haemophilus influenzae, Pseudomonas aeruginosa* and *Neisseria meningitidis*) (1, 3). Sometimes, epididymo-orchitis can be caused by *Escherichia (E.) coli*, as in our case.

CASE REPORT

A male preterm infant was born to a healthy mother by vaginal delivery at 38 weeks of gestation, with normal rupture of the membrane. Apgar score at first minute was 8 and 10 after 10 minutes. During three days, clinical status of the infant was normal. Physical examination performed on the fourth day revealed a firm, tender, painful and erythematous right hemiscrotum. The area of the right inguinal ring was firm, tender and painful. Physical examination of the abdomen was normal.

Laboratory evaluation disclosed white blood cell count of 11.8 g/L, C-reactive protein (CRP) of 91.1 mg/L and normal urine analysis. Ultrasonography revealed hyperechogenicity of the right testis with turbid fluid collection of 2 mm surrounding the testis. There was hyperechogenicity inside the fluid collection. There was no vascularity inside the testis (Figure 1). Abdominal ultrasonography was normal (there were no signs of genitourinary malformation). Physical examination performed on the fifth day revealed a more painful and more erythematous right hemiscrotum. The abdomen was firm and painful.

Blood culture and pus culture of the right scrotum aspirate obtained on the fifth day at emergency room revealed *E.*

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FIGURE 1. **Ultrasonography of the affected right scrotum and testis**

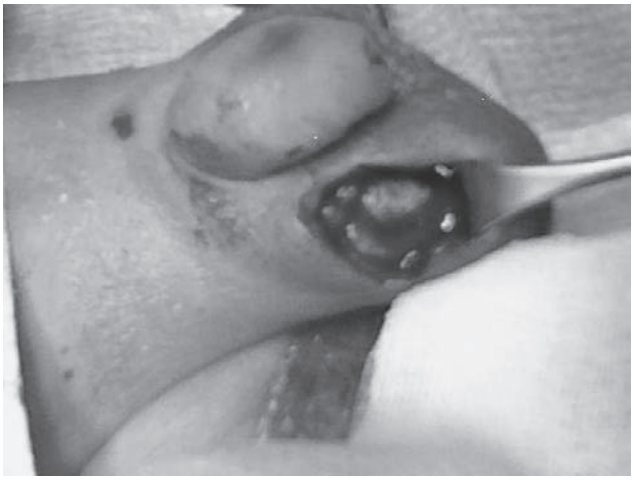

FIGURE 2. **Intraoperative finding: severe swelling of the spermatic cord, testis and epididymis**

coli. Initially, gentamicin and ampicillin *i.v.* were administered and then switched to vancomycin and meropenem *i. v.* following blood and pus culture results.

Nuclear testicular flow scan was not available 24 hours in our hospital. In case of acute scrotal swelling in neonates, we avoid computer tomography scan because it requires a high radiation dose.

All these findings failed to identify the cause of acute scrotal swelling in this infant (testicular torsion, incarcerated inguinal hernia or epididymo-orchitis), so emergency surgical exploration was our decision. We used inguinal and scrotal approach.

Intraoperatively, severe swelling of the spermatic cord and tunica vaginalis were observed (Figure 2). Peritoneal processus vaginalis was ligated. Swollen testis and epididymis with pus and fibrin were found. There was no sign of testicular torsion and incarcerated inguinal hernia. Antibiotic therapy was continued for seven days after surgical treatment. The postoperative course was favorable and ultrasonographic follow up of the testis was normal.

DISCUSSION

Epididymo-orchitis is a rare affection in the neonatal period. It should be differentiated from testicular torsion and incarcerated inguinal hernia to avoid unnecessary surgical exploration. Testicular torsion and incarcerated inguinal hernia require surgical treatment, but epididymo-orchitis is managed medically. Physical examination reveals swollen and painful testis with or without fever, but these signs are not specific for epididymo-orchitis because these are also signs of testicular torsion. *Chiang et al.* (4) performed a study with the aim to describe the characteristics of testicular torsion and epididymo-orchitis in young infants. They found the infants with acute testicular torsion to have characteristics of acute inflammatory process with firm, erythematous swelling lesion in the scrotum. Furthermore, they found that 86% of the infants with epididymo-orchitis had either abnormal physical signs (fever or scrotal tenderness) or abnormal laboratory findings (leukocytosis or elevated CRP level). In our case, clinical findings included both groups. Color Doppler ultrasonography of the scrotum is capable to confirm the diagnosis and eliminate testicular torsion. In epididymo-orchitis, Doppler ultrasonography reveals increased vascular flow and inhomogeneous echogenicity of the epididymis and testis (5).

In our case, ultrasonography showed no vascularity inside the testis. The major problem with Doppler ultrasonography is the lack of experience of the examiner (identification of vascular structures inside the infant's testicles is very difficult because they are so small).

CONCLUSION

Epididymo-orchitis is rare before puberty and should be distinguished from testicular torsion and incarcerated inguinal hernia immediately to avoid unnecessary surgical exploration. If testicular torsion and incarcerated inguinal hernia are excluded, infectious process is considered, such as sepsis or urinary tract infection. So, bacterial cultures including blood and urine in addition to urine analysis should be done. Abdominal ultrasonography should be performed to exclude genitourinary malformation. While awaiting the results, empirical antibiotics should be prescribed to treat the possible underlying sepsis. Sometimes, in spite of all these diagnostic procedures, surgical exploration cannot be avoided to confirm the diagnosis.

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SAŽETAK

Akutni septični purulentni epididimo-orhitis u novorođenčeta: prikaz bolesnika

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Epidimitis i epididimoorhitis rijetki su u neonatalnoj dobi. Vrlo je važno razlučiti ova stanja od torzije testisa, da se izbjegne nepotrebna kiruška intervencija. Escherichia colli je čest uzročnik sepse u neonatalnom razdoblju. Također je i jedan od uzročnika epididimoorhitisa nastalih ascedentnim putem. U našem prikazu slučaja liječili smo novorođenče s akutnim gnojnim epididimo-orhitisom u sklopu sepse E. colli. Zbog slične kliničke slike vrlo je teško klinički razlikovati torziju testisa u neonatalnoj dobi od epididimo-orhitisa. Kolor dopler ultrazvuk igra važnu ulogu u razlikovanju torzije testisa od epididimo-orhitisa. Unatoč kliničkoj i dijagnostičkoj obradi katkad nije moguće razlikovati ova dva klinička entiteta, pa ne možemo izbjeći operativni zahvat da bismo potvrdili dijagnozu.

Ključne riječi: epidimitis; sepsa; torzija testisa; *Escherichia coli;* novorođenče; ultrasonografija, dopler, kolor