Case Report

Testicular Torsion – An Important Consideration in Neonatal Scrotal Swelling

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ABSTRACT

Scrotal swelling in a neonate is rarely caused by testicular torsion, but it is an important differential diagnosis as acute treatment can prevent loss of fertility. The clinical findings differ, depending on whether the torsion has occurred in utero (prenatal) or after birth (postnatal). Postnatal testicular torsion presents with pain, redness, and swelling of the affected testis and requires acute surgical intervention to restore the blood flow and prevent ischemic necrosis. Contrary, prenatal testicular torsion will present with a hard, discolored untender mass that has already atrophied. It is important to quickly distinguish between prenatal versus postnatal cases to enable timely surgery of postnatal torsion, whereas the treatment of prenatal torsion is less urgent. A thorough clinical examination and ultrasonography with Doppler to detect blood flow or the lack of flow are the cornerstones in establishing an early diagnosis.

KEYWORDS: Neonatal, scrotal swelling, testicular torsion

INTRODUCTION

Neonatal testicular torsion (NTT) is a rare genitourinary condition, defined as torsion occurring prenatally or within the first 30 days of life. Testicular torsion is divided into extravaginal or intravaginal torsion. In extravaginal torsion, the entire testicle including the tunica vaginalis is involved as this is not yet fixed to the scrotal wall. Extravaginal torsion is usually seen in newborns where the rotation compromises the blood supply, leading to irreversible damage within hours. Intravaginal torsion is seen in older children and adults and involves only the testis, which rotates within tunica vaginalis.^[1,2]

Clinical features, treatment options, and fertility outcome depend on when the torsion occurs –prenatally versus postnatally – and when it is discovered. This report presents a case of unilateral prenatal testicular torsion diagnosed by ultrasonography in a newborn and highlights important differential diagnosis to scrotal swelling.^[2]

CASE REPORT

A term boy was delivered uncomplicated by cesarean section, which was performed due to lack

of birth progress despite administration of labor stimulants (oxytocin). Gestational age was 40 + 0 and birth weight 3664 g. The mother was pregnant by *in vitro* fertilization due to same-sex marriage and had previously had three spontaneous miscarriages. She had suffered from hyperemesis during pregnancy and had felt less fetal activity before delivery, but cardiotocography was normal. Routine ultrasonographic examinations during pregnancy were all normal.

Shortly after the delivery, the midwife noticed that the boy had a solid discolored swelling in the left hemiscrotum. The pediatrician on ward examined the child and found scrotal asymmetry with a nontender 3 cm × 3 cm solid nontransparent mass without fluctuation and with bluish discoloration of the overlying skin but no bruise over the groin [Figure 1]. Right scrotum, penis, and abdominal examination were normal. There was no evidence of trauma or infection.

A scrotal ultrasound with Doppler showed that the left testis was completely inhomogenic with fragmented

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Figure 1: Scrotal asymmetry with a nontender 3 cm × 3 cm solid nontransparent mass without fluctuation and with bluish discoloration of the overlying skin

parenchyma without any normal-looking tissue and without blood flow equivalent to prenatal testicular torsion. Examination of the right hemiscrotum showed a natural looking right testis, approximately 1.3 cm, with homogenic parenchyma and normal vascularization. There was edema of the scrotal wall on both sides but especially on the left. An ultrasound of the abdomen was not performed.

The boy was referred to a pediatric surgery department, where a contralateral (right-sided) orchiopexy, with an incision through the right scrotal wall and fixation with Vicryl 4-0, was performed at age 4 months. The atrophic left testis was left *in situ*.

DISCUSSION

NTT is characterized by extravaginal torsion, where the testis and the tunics twist around the axis of the spermatic cord resulting in ischemia. It is a rare condition with an incidence of 6.1/100.000 newborn children,^[3] and it is of utmost importance quickly to rule out postnatal torsion, which merits emergency scrotal exploration to preserve the testis.

The clinical workup constitutes a careful anamnesis including pregnancy history and objective examination combined with ultrasound scan with color Doppler of the scrotum and abdomen. The symptomatology depends on whether the torsion occurred in utero or perinatal. If the torsion develops after birth, the boy will present with acute symptoms such as pain, discomfort, scrotal tenderness, and swelling, and prompt surgical detorsion might result in salvage in up to 50% of cases.^[1-4] If the torsion occurred prenatally, the newborn is unaffected and the testicle is enlarged, hard, and nontender with

discoloration of the hemiscrotum as in our case, whereas the testicle may be small or absent if it occurred early during pregnancy.

High birth weight, prolonged pregnancy duration, breech presentation and prolonged labor as well as twin gestation, preeclampsia, and gestational diabetes mellitus are all associated with an increased risk of NTT.^[2,4,5] Apart from distinguishing between prenatal and postnatal cases of NTT, there are numerous differential diagnoses to have in mind when discovering a mass in the scrotum.^[2] These include neonatal scrotal hematoma (birth trauma, adrenal hemorrhage, and idiopathic), congenital hydrocele or hemocele, tumor, incarcerated hernia, infections (scrotal abscess, epididymitis, and orchitis), and torsion of the appendix testis or epididymitis. These conditions all have similarities to the clinical findings of NTT, and a thorough clinical examination of both testes and the abdomen are important to rule out such differential diagnosis. In cases with infection, the affected scrotum appears tender, red, and warm, whereas hydrocele is a soft translucent swelling. Hematoma, incarcerated hernias, tumors, and torsion of other scrotal parts can best be differentiated with ultrasonography with color Doppler, which is the first choice diagnostic modality. The procedure requires an experienced operator, but it is noninvasive and easier to perform than magnetic resonance imaging, which is expensive, and not always available.

In prenatal testicular torsion, the treatment is nonemergent^[1,2,5] and serves to prevent contralateral torsion and anorchia. Animal studies have shown that ischemia of the testes leads to loss of spermatogenesis after 4–6 h and loss of hormonal function after 10–12 h.^[3] Prenatal testicular torsion is therefore not a condition that requires emergent surgery as the affected testes have already undergone atrophy as is no longer functioning.

The suggested strategy is to fixate the contralateral testis (orchiopexy) to prevent later torsion of the healthy testis. However, in a recent study with 17 neonates where 7 of them did not undergo contralateral orchiopexy, no torsion was observed in the observation period of 4.2–13.7 months.^[4] Most surgeons suggest removing the affected testis (orchiectomy)^[1,3-5] because of a theoretical risk of tumor formation. However, there might be some testicular function left in the atrophied testis, which favors leaving it *in situ*.^[2,5]

In postnatal cases, it is of utmost importance that emergent surgical exploration is performed to prevent ischemic necrosis.^[2,5]

CONCLUSION

NTT is a rare condition, but it is important to keep it in mind if a clinical examination of a neonate shows a scrotal swelling. The finding of a discolored and tender mass should lead to acute ultrasound with Doppler to explore whether the testicular blood flow is compromised where emergent surgery may result in salvage of the affected testis and prevent monorchidism. In prenatal torsion, treatment is nonemergent, but there is a lack of consensus on whether the atrophied testis should be left *in situ*.

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Conflicts of interest

There are no conflicts of interest.

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