Title
Torsion of Undescended Testis in a 14-Month-Old Child Refusing to Bear Weight

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In this report, we discuss a case of a 14-month-old male presenting in the emergency department with refusal to bear weight on his left leg. Plain radiographic studies revealed no evidence of effusion, fracture, or dislocation. Laboratory studies were significant for an elevated white blood cell count, erythrocyte sedimentation rate, and C-reactive protein. Further studies included unremarkable ultrasound of the left hip and normal magnetic resonance imaging (MRI) of both hips. An incidental finding on MRI was a left inguinal mass concerning an incarcerated hernia. Ultrasound of this mass demonstrated a left undescended testis within the inguinal canal and possible incarcerated paratesticular inguinal hernia. The final pathologic diagnosis of a torsed gangrenous left testicle within the inguinal canal was confirmed during surgery. [West J Emerg Med. 2011;12(4):515–519.]

INTRODUCTION

The differential diagnosis of a child refusing to bear weight is broad and includes musculoskeletal disorders, neoplasm, infection, and abdominal and genitourinary pathology. Included in this differential is torsion of an undescended testicle or ovary. Symptoms of a torsed undescended testicle are highly nonspecific, and its presentation is variable. We report a rare case of undescended testicular torsion in a child presenting with the parents’ chief complaint that the child will not bear weight on his left leg.

CASE REPORT

A 14-month-old male presented to our emergency department (ED) refusing to bear weight on his left leg since waking in the morning. His parents reported a 4-day history of elevated temperatures with a maximum temperature of 100.4°F. Per his parents’ report, he normally walks independently. His parents also reported decreased oral intake, increased fussiness the day of presentation, and no bowel movement for 3 days prior to presentation. The parents denied vomiting, inconsolable crying, loose stools, cough, congestion, recent illness, or sick contacts prior to his presentation in the ED. His past medical history was significant for congenital hip dysplasia, treated only with nightly bracing, and bilateral undescended testes. The family recently moved to the area and had not established care with a urologist regarding orchiopexy. The child received only 1 round of immunizations due to parental preoccupation with his congenital hip dysplasia, undescended testes, and the family’s recent move. He had no known drug allergies, did not take any medications, and had no family history of disease.

Physical exam revealed blood pressure 93/49 mmHg, heart rate of 153 beats per minute, respiratory rate of 28 breaths per minute, temperature of 100.4°F, oxygen saturation 96% on room air, and a weight of 10 kg. The child was fussy but consolable sitting on his mother’s lap. When placed in a standing position, the patient held his left hip in flexion, abduction, and external rotation, refusing to allow his foot to touch. He was able to hold all his weight on his right foot. Skin exam revealed no evidence of exanthema, erythema, warmth, induration, or fluctuance. Full passive range of motion of the left hip was intact and caused no additional distress to the child from his baseline crying. His abdominal exam revealed a soft, nontender, nondistended abdomen without masses, guarding, or rebound. His genital exam revealed a circumcised male with undescended testes bilaterally. No inguinal masses were seen or palpated. The remainder of his physical examination was unremarkable.

Radiographs of his left hip, femur, and knee demonstrated no fracture, effusion, or other abnormal...
process. Laboratory studies were remarkable for a leukocytosis of 16.7 and an elevated erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) at 103 mm per hour and 4.7 mg/L respectively. A single blood culture was drawn. An ultrasound of his left hip was performed and demonstrated no joint effusion.

Orthopedics was consulted, and the patient was admitted to pediatrics for an inpatient magnetic resonance image (MRI) of the left hip to evaluate for septic joint prior to proceeding to the operating room for joint aspiration. This MRI showed normal appearing hips but did reveal a left inguinal mass concerning an incarcerated hernia (Figures 1 and 2). An ultrasound of this mass was performed and demonstrated an undescended testicle within the inguinal canal as well as an associated paratesticular inguinal hernia with possible incarceration (Figures 3 and 4). Surgical exploration revealed a gangrenous, torsed left testicle within the inguinal canal. The patient underwent a successful

Figure 1. This coronal T2 weighted magnetic resonance image of the patient demonstrates a normal homogenous right undescended testicle (small arrow) and a heterogeneous inflamed left undescended testicle (large arrow).

Figure 2. This coronal T1 weighted magnetic resonance image of the patient demonstrates a normal homogenous right undescended testicle (small arrow) and a heterogeneous inflamed left undescended testicle (large arrow).

Figure 3. Transverse color Doppler image of the patient’s right testicle demonstrates uniform echogenicity and flow throughout the testicle.

Figure 4. This transverse color Doppler image of the patient’s left testicle demonstrates heterogenous echogenicity and no flow throughout the testicle.
left orchiectomy and inguinal canal reconstruction and was
determined to return to the operating room in 4 weeks for right-
sided orchiopexy. The patient’s recovery was uneventful, and he
was discharged from the hospital in 3 days.

**DISCUSSION**

Refusing to bear weight in a child is a concerning
complaint and has a broad differential. Infectious causes
include septic arthritis, transient synovitis, osteomyelitis,
diskitis, and cellulitis. Neoplastic causes include bony
tumors, such as Ewing’s sarcoma, osteochondroma, and
osteosarcoma, as well as neuroblastoma, leukemia, and
lymphoma. Trauma and nonaccidental trauma must always be
considered in this pediatric complaint. Abdominal pathology
for this complaint includes appendicitis, psoas abscess, and
genitourinary disorders, such as testicular or ovarian torsion
(Table).

Routine laboratory testing is neither specific nor sensitive
regarding the workup of patients with a limp or refusing to bear
weight. Tests should be ordered based on the history and
physical exam findings to help establish the diagnosis.
Laboratory tests can be helpful when malignancy, infection, or
inflammatory arthritis is suspected. These tests should include
a complete blood count, ESR, CRP, and a blood culture and
lyme testing if geographically appropriate. Radiographic studies
should begin with standard radiography, which can reveal fractures, dislocations, large
effusions, and are noninvasive, relatively inexpensive, and
easily obtained. An oblique view of the tibia and fibula
increases the sensitivity to diagnose a toddler’s fracture. Further
studies should be ordered based on the history and physical.
Ultrasonography can help detect small effusions, soft tissues
masses, and is also noninvasive. Studies such as computer axial
tomography (CT), bone scan, and MRI may also be indicated.
CT can quickly diagnose abdominal pathology or bony
abnormalities. MRI is useful for spinal pathology, soft tissue
masses, tumors of the bone, and intra-articular pathology.

Testicular torsion is classically described as having a
bimodal distribution with peaks being within the first year of
life and early in puberty. Although this bimodal distribution is
the most common presentation, torsion can occur at any age
and must be considered in any male with acute scrotal or
abdominal pain. Although a rare event overall, among patients
with undescended testes, torsion is not uncommon and is the
primary indication for surgical correction once the patient is
determined safe for general anesthesia. A recent 20-year
retrospective review found only 11 cases with most cases in the
perinatal period. Another study found a torsion rate of 3.8% of
patients going to the operating room with an undescended
testis. Andersen and Wille-Jorgensen present a 3.6% rate of
undescended testicular torsion in a 5-year retrospective study of
patients with suspected torsion. For poorly understood reasons,
torsion more commonly occurs in the left testis. The
presentations of these cases have been associated with groin
pain, a palpable mass, or inconsolable crying. None of these
cases are reported in the 1- to 3-year-old age range; most are in
children under 1 year of age, making this a unique case in
medical literature.

In the undescended testicle, torsion classically occurs in
the perinatal period and is considered unlikely after the first
year of life. However, the highest incidence of testicular torsion
occurs in the young adult population. Most testes are
unsalvageable at the time of diagnosis due to the difficulty of
the diagnosis in this age range. Due to the consequences of a
missed diagnosis, clinicians must have a high index of
suspicion and always keep testicular torsion part of their
differential diagnosis with any child refusing to bear weight.
Doppler ultrasound has emerged as the test of choice for
diagnosis of testicular torsion; however, a high false negative
rate remains. Sensitivity of 87.9% and specificity of 93.3% for
Doppler ultrasound for testicular torsion is reported, but this is
much lower in the case of the undescended testis. Current
literature recommends orchiopexy by the age of 2. The rate of
spontaneous descent declines significantly after 3 months of
age, and the risks of surgery and general anesthesia decrease
after 1 year.

The previous cases reported in the literature of infants or
toddlers with undescended testicular torsion had symptoms that
led to a diagnosis of nonspecific abdominal pain leading to the
final diagnosis. These symptoms include inconsolable crying,
tolerable feeding, or restlessness. This case lacks those
features as the child continued to feed and was fussy but
consolable. He did not have a palpable inguinal mass or any
apparent distress with abdominal or genitourinary exam.

The child who refuses to bear weight or use a joint should
be considered to have a serious condition until proven
otherwise and necessitates a through workup until the source is
revealed. Testicular torsion must be included in the
differential of any child with an empty scrotum and concerning
symptoms. Salvage rates are estimated at 90% to 100% if
detorsion occurs within 6 hours of onset of symptoms, but
decline to 20% after 12 hours and 0% to 10% if delayed longer
than 24 hours. However, severe damage is reported to occur
within 4 hours of onset of symptoms. Early urologic
consultation is critical, even prior to definitive diagnosis if
suspicion is high enough.

**CONCLUSION**

The primary issues in the case of a pediatric patient with an
undescended testicular torsion are both delay in presentation
and delay in diagnosis, leading to a necrotic testicle. These
children usually present late with nonspecific symptoms that
lead to a broad differential that must be quickly narrowed if the
case is to have a salvageable testicle. Patients undergoing
orchiectomy can have issues with fertility later in life secondary
to a decreased sperm count. This case demonstrates a
nonspecific history and physical examination in a child outside
the classic age range for testicular torsion. Emergency
### Table. Etiologies of limp by age in toddlers and children.

<table>
<thead>
<tr>
<th>Ages</th>
<th>History and physical exam</th>
<th>Laboratory studies</th>
<th>Imaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 3 years</td>
<td>Septic arthritis</td>
<td>Flexed/abducted/externally rotated hip; joint tenderness, swelling, warmth</td>
<td>CBC, ESR, CRP, joint aspiration, blood culture</td>
</tr>
<tr>
<td></td>
<td>Osteomyelitis</td>
<td>Fever, local erythema, edema, warmth, reduced movement</td>
<td>CBC, ESR, CRP, blood culture</td>
</tr>
<tr>
<td></td>
<td>Fractures, including trauma</td>
<td>Localized tenderness, deformity, ecchymosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discitis</td>
<td>Neurologic findings</td>
<td>CBC, ESR, CRP</td>
</tr>
<tr>
<td></td>
<td>Neurologic disorder</td>
<td>Neurologic findings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Developmental dysplasia of the hip</td>
<td>Limb lengths, Ortolani sign</td>
<td></td>
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<tr>
<td></td>
<td>Lyme arthritis</td>
<td>Polyarticular, intermittent pain</td>
<td>Lyme antibody titers</td>
</tr>
<tr>
<td></td>
<td>Abdominal pathology</td>
<td>Abdominal exam, localized pain, hematochezia</td>
<td>CBC, ESR, CRP, UA</td>
</tr>
<tr>
<td></td>
<td>Congenital limb length discrepancy</td>
<td>Limb lengths</td>
<td></td>
</tr>
<tr>
<td>4 to 10 years</td>
<td>Septic arthritis</td>
<td>Flexed/abducted/externally rotated hip; joint tenderness, swelling, warmth</td>
<td>CBC, ESR, CRP, joint aspiration, blood culture</td>
</tr>
<tr>
<td></td>
<td>Osteomyelitis</td>
<td>Fever, local erythema, edema, warmth, reduced movement</td>
<td>CBC, ESR, CRP, blood culture</td>
</tr>
<tr>
<td></td>
<td>Transient synovitis</td>
<td>Preceding viral illness</td>
<td>CBC, ESR, CRP, blood culture</td>
</tr>
<tr>
<td></td>
<td>Fractures, including trauma</td>
<td>Localized tenderness, deformity, ecchymosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kohler disease</td>
<td>Navicular tenderness</td>
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<tr>
<td></td>
<td>Legg–Calvé–Perthes disease</td>
<td>Gait, decreased range of motion</td>
<td>CBC, ESR, CRP, blood culture</td>
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<tr>
<td></td>
<td>Duchenne muscular dystrophy</td>
<td>Proximal weakness, calf pseudohypertrophy, Gower sign</td>
<td>Creatine kinase</td>
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<tr>
<td></td>
<td>Lyme arthritis</td>
<td>Polyarticular, intermittent pain</td>
<td>Lyme antibody titers</td>
</tr>
<tr>
<td></td>
<td>Juvenile idiopathic arthritis</td>
<td>Individual joints</td>
<td>Rheumatoid factor, joint aspiration</td>
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<td></td>
<td>Abdominal pathology</td>
<td>Abdominal exam, localized pain, hematochezia</td>
<td>CBC, ESR, CRP, UA</td>
</tr>
<tr>
<td></td>
<td>Leukemia</td>
<td>Fever, fatigue, bleeding, lymphadenopathy</td>
<td>CBC, chemistry, bone marrow aspiration</td>
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<tr>
<td>11 to 18 years</td>
<td>Septic arthritis, including <em>Neisseria gonorrhea</em></td>
<td>Flexed/abducted/externally rotated hip; joint tenderness, swelling, warmth</td>
<td>CBC, ESR, CRP, joint aspiration, blood culture</td>
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</table>
physicians must use available diagnostic tools to quickly narrow the differential and appropriately dispose the child to raise the chance of a salvageable testicle.

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**REFERENCES**


