Pediatric Hip Pain: A Case Study

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ABSTRACT

Hip pain in children can present a diagnostic challenge for the pediatric primary care provider. This case study examines an otherwise healthy 3-year-old girl with unilateral hip pain and intermittent refusal to bear weight on the affected side. Through history and physical examination, the provider was able to appropriately diagnose transient synovitis. This case study will summarize the care for hip pain in a child, including potential causes, a focused history and physical examination, appropriate diagnostic testing, and recommendations for home care and follow-up. J Pediatr Health Care. (2017) *31*, 713-716.

KEY WORDS

Case report, child, hip pain, transient synovitis

CASE PRESENTATION

A 3-year-old girl presented to her primary care provider with a chief complaint of left-sided hip pain and intermittent refusal to bear weight on the affected side. This child's pain started 1 day before clinic presentation, and intermittent refusal to bear weight on the affected side started on the day of presentation. Before the onset of pain, her gait and activity level were normal. The child's pain was unrelieved with acetaminophen, ibuprofen, ice, heat, and rest. Her parents reported that the child had recovered from upper respiratory infection symptoms approximately 2 weeks earlier but that she had otherwise been healthy. Importantly, the child's parents denied injury, fever, erythema, or swelling of the hip; bleeding, bruising, or pallor; pain at a specific time of day; and changes in her appetite, elimination, or behavior.

PAST MEDICAL HISTORY

The child was a singleton, born full term, via spontaneous vaginal birth. There were no pregnancy or birth complications. All recommended immunizations were up to date. She had not had any orthopedic concerns, major illness or injury, hospitalizations, or surgeries. She walked at 11 months of age. She did not have any known allergies and was not taking any scheduled or prescription medications.

FAMILY HISTORY

The child's maternal great-grandmother was diagnosed with rheumatoid arthritis as an adult, her maternal grandmother was in remission after treatment for breast cancer, and her mother was currently receiving treatment for breast cancer. The child's family history was otherwise noncontributory.

SOCIAL HISTORY

The child lives in a single-family house with her mother, father, 6-year-old sister, and a dog. She attends preschool 5 half-days per week.

PHYSICAL EXAMINATION

The child was alert, interactive, and well appearing at rest, although hesitant to walk or change position without assistance. Her height, weight, and body mass index were all at the 97th percentile for age. She was afebrile, with age-appropriate vital signs. The child's head, neck, and lung examination results were unremarkable. The cardiovascular examination result was unremarkable; importantly, femoral pulses were 2 +

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bilaterally, distal capillary refill time was brisk, and no pallor was noted. Her abdomen examination results were normal.

The neurologic and musculoskeletal examination showed intact cranial nerves and patellar tendon reflexes. Muscle bulk and strength were intact and equal, and no leg-length discrepancy was noted. No clicking or snapping in either hip was observed. The child showed a left-sided limp with ambulation. Regarding range of motion (ROM), the child was positioned both prone and supine, wherein she winced with passive motion of the left lower extremity, including abduction both with and without external and internal rotation of the limb. Adduction greater than 10° beyond midline elicited complaints of pain. The child was unwilling to logroll over her left hip. Passive ROM was within normal limits in the right hip and lower extremity and was symmetric in the knees, ankles, and feet. The child had no palpable lymphadenopathy, rashes, erythema, swelling, or warmth noted over her hip or surrounding areas.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for this child included hip trauma, transient synovitis (TS), Legg-Calve-Perthes disease (LCPD), septic arthritis, osteomyelitis rheumatologic or autoimmune disease, and malignancy, particularly leukemia, lymphoma, neuroblastoma, or sarcoma.

The family had no recollection of injury, making hip trauma unlikely. The child's ROM was not greatly restricted, she had no leg-length discrepancy, and no muscle loss in the upper thigh, so LCPD was excluded. The child was afebrile and well appearing, and she had no erythema, swelling, warmth, joint immobility, or rashes over or around the hip, which supported the exclusion of septic arthritis and osteomyelitis. Because of the child's single-joint, nonmigratory, nontemporal pain and lack of systemic symptoms, a rheumatologic or autoimmune process seemed unlikely. Lastly, the child's sudden onset and short duration of pain, in addition to her well appearance, unchanged elimination patterns, and lack of bleeding, bruising, pallor, or palpable masses made a malignancy diagnosis unlikely. Therefore, TS was diagnosed in the child.

Because of the child's single-joint, nonmigratory, nontemporal pain and lack of systemic symptoms, a rheumatologic or autoimmune process seemed unlikely.

DISCUSSION

TS is the most common cause of pediatric hip pain and limp, affecting up to 3% of the general pediatric population (The Royal Children's Hospital Melbourne, 2012). TS mainly affects children ages 3 to 8 years old, with males manifesting the condition nearly twice as frequently as females (Asche, van Rijn, Bessems, Krul, & Bierma-Zeinstra, 2013; Claytor & Bazner-Chandler, 2017). The pain is often unilateral and can radiate to the knee, but it does not greatly limit ROM or restrict ambulation (Krul, van der Wouden, Schellevis, van Suijlekom-Smit, & Koes, 2010). In 1 to 4% of TS cases, pain can present bilaterally (Nouri, Walmsley, Pruszczynski, & Snyder, 2014).

The etiology of TS is uncertain; however, approximately half of patients diagnosed with TS experienced symptoms of gastroenteritis or an upper respiratory infection within 1 to 2 weeks of the onset of hip pain (Houghton, 2009; Krul et al., 2010). TS presentations tend to be seasonal, peaking in October and tapering in February; coinciding with peak viral illness presentations (Nouri et al., 2014). Although elevated serum interferon levels have been in observed in patients who underwent laboratory testing as part of their hip pain work-up, these findings could be coincidental, resulting from a viral or postviral state (Nouri et al., 2014). Although some literature supports the theory that TS has a viral, bacterial, or protozoal etiology, others assert that extensive laboratory investigation, including throat swabs, blood samples, and synovial fluid testing, has not shown a precise infectious cause (Asche et al., 2013; Kastrissianakis & Beattie, 2010; Nouri et al., 2014). Other etiologic considerations include allergic states and prior trauma (Nouri et al., 2014).

PATHOPHYSIOLOGY

Information about the pathophysiology of transient synovitis remains scarce, although it has been described as a "….benign inflammation of the synovial lining of the hip" (Krul et al., 2010, p. 167), and "…. nonspecific inflammation and hypertrophy of the synovium with an effusion in the hip joint" (Epocrates, 2017, Pathophysiology, para. 1).

TS remains a diagnosis of exclusion (Nouri et al., 2014). The diagnosis is based on a thorough history and physical examination; diagnostic testing is not recommended in children who have a limp lasting 3 or fewer days (The Royal Children's Hospital Melbourne, 2012). Hallmark signs include moderate ROM limitation and/or pain with internal rotation of the leg and the patient's refusal to logroll over the affected side (Houghton, 2009; The Royal Children's Hospital Melbourne, 2012). The assessment of fever in the child is one of the most important physical examination findings in differentiating between TS and other, more concerning diagnoses (Krul et al., 2010).