

Case Report

A 12-year-old Girl with Back Pain

Urgent message: Back pain in a pediatric patient requires a high index of suspicion. Ominous causes (e.g. cancer, infection), are far more common in the pediatric population. Conversely, mechanical low back pain is far less common, and is a diagnosis of exclusion.

Forrest Nguyen, DO

Introduction

As urgent care physicians, we are responsible for anything that comes through the door. Often, the diagnosis proves to be routine—a viral infection, a sore throat, or cough.

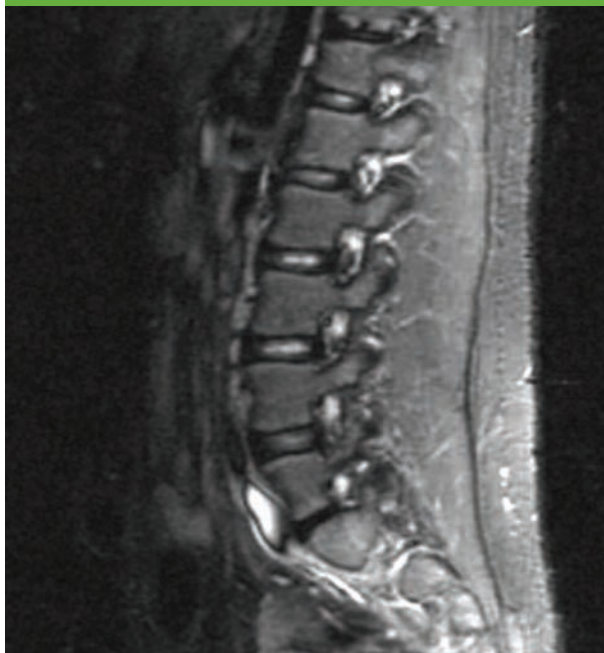
Other times, however, we discharge the patient wondering if we made the right diagnosis. In-house labs, CT scans and/or MRIs are a luxury not all centers enjoy. For those that do not, the history and physical exam become ever more important and are the foundation of correct diagnosis.

Case Study

A 12-year-old female presented with a one-week history of back pain described as gradual onset, sharp, and 10 out of 10 on the pain scale. She indicated a location in the lower back between the L4 and L5. The pain did not radiate, was worse with movement, and was alleviated with ibuprofen.

The patient stated that the pain began right after

Figure 1. MRI Results



getting her tetanus shot. She denies any recent history of trauma or injuries, but admits to falling off a trampoline two years ago and hurting her ankle. Plain film of the ankle at the time was negative.

She also denies any headaches, acute visual changes, dyspnea, chest pain, recent infection, or acute neurological changes, as well as any urinary/bowel incontinence or saddle anesthesia.

Upon further questioning, the patient admitted to bilateral lower quadrant abdominal pain and bladder pressure. She stated she had minimal urination (“just dripping”) over the previous four days. Her last

void was the night before. She denies any dysuria, vaginal discharge, or incontinence.

The patient reported that her last menstrual period was two months ago, but denies any sexual activity. She is awake, alert, and in no acute distress. Our findings are detailed in **Table 1**.

Table 1. Findings in Urgent Care	
BP: 114/70 P: 80 T: 98.5 (tympanic) Wt: 138 lbs (62.6 kg) LMP: 2 months ago	Abdomen: BS x 4, soft, b/l lower quadrant tenderness, non-distended, no masses, no bruits, no hepatomegaly, no guarding, no rebound
HEENT NCAT, PERRLA, EOMI, TMs clear bilaterally	Back: No deformity, no costovertebral angle tenderness, point tenderness L4-L5 with no radiculopathy
Nares patent	Extremities: No clubbing, cyanosis, or edema, 2+ dorsalis pulses bilaterally
Oropharynx pink and moist without erythema or exudate	Neurological: CN 2-12 grossly intact, MS 5/5 all extremity, absent patellar reflexes b/l
Tonsils not enlarged	Achilles reflex intact, negative Babinski
Neck: Supple, no lymphadenopathy, full range of motion, no deformity	Pt with antalgic gait
Lungs: Clear to auscultation bilaterally	Proprioception intact, sensation to sharp and dull stimuli intact, b/l quadricep "clonus," negative Romberg, Mini mental exam nml
Heart: Regular, S1/S2 no rubs, murmurs, or gallops	Skin: No lesions, rashes, or deformities

The patient was admitted into the hospital, where the following labs were drawn:

WBC-12.0	Na-140
Hgb-12.7	K-3.9
Hct-36.9	Cl-102
Plt-252	Co2-28
Neut-80.5	BUN-9
Bands-0	Creat-0.41
Lymph-12.6	Glucose-107
Mono-5.8	Alk Phos-111
Eosin-0.8	ALT-12
Baso-0.3	AST-11

UA (clean catch)—unable to obtain
Foley Catheter—240 ml
UA—negative
Urine drug screen—negative
Urine pregnancy—negative
Sedimentation rate—94 mm/hr
CRP—5.4

CT ABD with contrast

- No CT evidence for acute intra-abdominal process

- Approximately 11 mm low attenuation lesion in the midpole left kidney, likely representing a cyst
- CT pelvis with contrast*
- Bilateral ovarian follicles with a small amount of free fluid in the cul-de-sac
 - Foley catheter and gas within the bladder lumen
- Over-read by pediatric radiologist: Findings are very suspicious for probable discitis at L5-S1 with possible osteomyelitis involving S1. MRI of the L-S spine is recommended.

MRI results

Findings suspicious for osteomyelitis involving superior T12 body and at least S1. Prevertebral and epidural phlegmon from superior L5 to S1.

Discussion

Back pain is a rare complaint in the pediatric population. Approximately half of the episodes of back pain in all age groups are caused by musculoskeletal trauma. The remainder is from infection, idiopathic pain, sickle cell pain crisis, or miscellaneous causes.

In the ambulatory care setting, overloaded school backpacks (defined for our purposes as weighing >15% to 20% of the child’s weight) are a common cause of back pain in children.

The following are red flags that the physician should consider in evaluating every pediatric patient with back pain:

- young age (particularly <4 years)
- fever
- weight loss
- severe or constant pain
- nocturnal pain
- progression over the course of time
- history of acute or repetitive trauma
- history of malignancy or tuberculosis exposure
- evidence of neurologic dysfunction (bowel or bladder dysfunction or abnormal reflexes)
- interference with activity

Discitis

Discitis usually presents with the gradual onset of irritability and back pain. The patient will sometimes refuse to walk. The disease is usually without systemic toxicity and is only occasionally accompanied by fever.

In some patients, abdominal pain may be the only complaint.

The lower lumbar discs are affected most commonly, but any disc (occasionally more than one) may be involved.

Continued on page 28

that did and did not have chest pain when the normal initial ECG was obtained (16% and 20%, respectively).

Lack of changes on an ECG performed during chest pain often is thought to reduce the likelihood of ACS. However, this and other research has shown that this assumption is erroneous and that the likelihood of serious cardiac disease in patients with chest pain and an initial normal ECG is the same whether or not chest pain was present when the ECG was obtained.

[Published in *J Watch Emerg Med*, June 12, 2009—Diane M. Birnbaumer, MD, FACEP.] ■

A Resuscitation Protocol That Minimizes Hands-off Time Improves Survival

Key point: A pre-hospital protocol emphasizing minimal interruption of chest compressions was associated with improved survival to hospital discharge.

Citations: Garza AG, Gratton MC, Salamone JA. Improved patient survival using a modified resuscitation protocol for out-of-hospital cardiac arrest. *Circulation*. 2009;119:2597-2605.

Ewy GA. Do modifications of the American Heart Association guidelines improve survival of patients with out-of-hospital cardiac arrest? *Circulation*. 2009;119:2542-2544.

Recent research suggests that minimizing interruptions during cardiopulmonary resuscitation improves coronary perfusion pressure and increases the likelihood of return of spontaneous circulation (ROSC).

The Kansas City, MO, emergency medical services system changed its cardiac arrest protocol to emphasize early chest compressions and de-emphasize airway management for resuscitation of adult patients with primary cardiac arrest (ventricular fibrillation [VF] or pulseless ventricular tachycardia).

In a retrospective study, researchers compared ROSC, survival to discharge, and cognitive function in 1,097 patients with primary cardiac arrest during the 36 months before the change and 339 patients during the 12 months after.

Overall, survival to discharge increased significantly from 7% before the change to 14% after. In the subset of adult patients with witnessed arrest and an initial rhythm of VF (143 before the change and 57 after), survival to discharge increased significantly from 22% to 44%, and rates of ROSC increased significantly from 38% to 60%. In this subset, cerebral performance category scores at discharge (assessed only in the after group) were favorable (scores of 1 or 2) in 88% of 25 survivors.

The concept of minimally interrupted cardiac resuscitation is important for revising how we think about CPR. Our focus should be to provide sufficient and sustained perfusion to the ailing myocardium. Prolonged or repeated interruptions significantly undermine the process.

[Published in *J Watch Emerg Med*, June 5, 2009—Aaron E. Bair, MD, MSc, FAAEM, FACEP.] ■

Neurologic findings (e.g., decreased muscle strength or reflexes) may be present; blood cultures, typically, are sterile.

White blood cell count usually is normal, and the erythrocyte sedimentation rate is elevated in most patients.

The etiology of discitis is controversial. For our patient, the cause was never found.

Sixty percent of biopsied discs grow bacteria, usually *Staphylococcus aureus*.

Differential diagnosis should include consideration of the following:

- Spondylolysis is a unilateral or bilateral defect (separation) in the vertebral pars interarticularis, usually in the lower lumbar vertebrae, particularly L5. Spondylolisthesis occurs when bilateral defects permit anterior slippage of the vertebral body. These may be congenital, but more typically are acquired as the bone “fatigues” from recurrent microtrauma during excessive lumbar hyperextension, a common problem in gymnasts, dancers, divers, weightlifters, and football linemen.
- Scoliosis.
- Degenerative disc disease. Herniation of the nucleus pulposus is less common in children than in adults. Some risk factors include acute trauma and Scheuermann kyphosis.
- Osteoid osteoma, the most common neoplasm that presents with back pain in children. This is a benign bone tumor characterized by nocturnal pain and prompt relief with NSAIDs.

Treatment

Children often recover from discitis without antibiotic therapy, and many cases probably go undiagnosed. The current consensus is that discitis in children is a low-grade infection. Host defense systems usually are capable of overcoming the infection without assistance because the disc is richly vascularized up to 7 years of age. Occasionally, host defenses are overwhelmed, and complications such as abscess formation may result.

Treatment for discitis is not standardized. Aspiration of the affected disc for culture usually is not performed. Empiric antibiotic therapy should be directed against *S aureus*. Limited retrospective data suggest that initial treatment with IV antibiotics followed by oral antibiotics is associated with more rapid response and fewer relapses than is treatment with oral antibiotics or analgesia alone. ■