

Chapter 12

A Girl with Low Back Pain due to Deconditioning



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Brief Case Presentation

Chief Complaint

Many years history of low back pain

History

This 11-year-old girl had been having low back pain for the past few years. She describes that pain in her low, central back, with no radiation. She has pain with running and standing from a seated position. There was no history of trauma. She manages the pain with anti-inflammatory medication and heat packs applied to the area of pain. There is no pain, numbness, or weakness in other joints or systematic symptoms. Bowel and bladder functions are normal.

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Physical Examination

Weight 34.8 kg, height 147 cm, BMI 16. She is a healthy well-nourished child. There are no deformities of her trunk or lower extremities. Her stance and gait are normal. She has pain with forward spine flexion. When asked to do 5 pushups she has marked difficulty maintaining proper plank position and cannot complete them. Popliteal angle on the left is 45° and on the right is 40°.

Imaging and Radiographic Studies (Figs. 12.1 and 12.2)

Questions About the Case the Reader Should Consider

1. Did an event or trauma occur before the pain began?

Fig. 12.1 PA standing lumbar sacral radiograph. No abnormalities are present



Fig. 12.2 PA standing thoracic lumbar radiograph. Mild asymmetry is noted. However, there is no rotation of the spinous process; therefore no significant scoliosis is present



2. Why does she experience pain when standing from a seated position?
3. What is the appropriate referral?
4. What is the next diagnostic test that should be considered?
5. What are possible treatments in this case?

Discussion

Nonspecific low back pain is the most common type of back pain among young children and especially adolescents [1]. Risk factors for low back pain in children include inactivity such as sitting and watching television or excessive time playing video games, obesity, sedentary lifestyle, sports participation, and a positive family history [2]. For children involved in sports, it is important to ask if there was an

event or trauma that occurred before the onset of pain, as this could be a cause of spondylolysis and spondylolisthesis. For this patient there was no inciting incident. She may also have trouble standing from a seated position due to low back pain from underuse and deconditioning.

If her symptoms do not improve after 2–4 weeks, a referral may be made for physical therapy. A referral for specialty evaluation is made to a pediatric orthopedic surgeon and/or a neurosurgeon if the patient exhibits progressive neurologic deficit, conservative therapy fails, or the diagnosis is serious or uncertain. Serious conditions would include cauda equina syndrome, herniated disk, spinal stenosis, tumor, infection, or fracture [3].

If a patient with nonspecific low back pain does not improve after 6 weeks of conservative treatment including therapy, then laboratory tests and spine radiographs should be obtained. CBC, ESR, and CRP can help to evaluate the presence of inflammation, infection, or tumor. Excess imaging with limited benefit in the evaluation of low back pain in children has been reported [4]. For this reason, in nonspecific cases a radiograph is recommended if no improvement occurs after 6 weeks of follow-up, rather than sooner. On the other hand, if the history and physical examination suggest serious pathology, urgent referral to a pediatric spine specialist should be made. The specialist can then order advanced imaging, CT or MRI, as needed for diagnostic purposes and potential surgical planning. For this patient, routine referral was made to a pediatric orthopedic surgeon, but no advanced imaging was ordered because at her follow-up appointment, her pain had improved with physical therapy.

Low back pain is nonspecific when no definable cause can be identified. In such cases, the cause of the pain may be deconditioning combined with a strain of ligaments or muscles or other minor strains to the intervertebral disks or facet joints. Unfortunately, the exact cause of the pain is not always discernable—the diagnosis of nonspecific low back pain is a diagnosis of exclusion [2]. Treatment for nonspecific low back pain is conservative care with 4–6 weeks of physical therapy, observation, and reassurance. In addition, acetaminophen, NSAIDs, rest, application of cold/heat, or massage therapy can also be prescribed [2]. Parental involvement increases the child's compliance with treatment. In this case, she completed physical therapy, and at her last follow-up, her low back pain was markedly improved.

How to Approach the Case

Nonspecific low back pain is common. One goal of evaluation is to rule out potentially serious causes. A detailed history and physical is key to making an accurate diagnosis and guiding treatment. Specific questions to include are the onset of symptoms, description of the pain, location, duration, exacerbating and alleviating factors, presence or lack of pain radiation, family history, and if there is morning stiffness [2]. A complete neurological examination including deep tendon reflexes, strength, sensation, and gait should be performed. Core strength and stability should

be examined to determine if the pain stems from weakness of the paraspinal and lateral abdominal muscles [2]. In cases of nonspecific back pain, radiographs are recommended if no improvement occurs after 6 weeks of conservative care. Advanced imaging such as bone scan, CT, or MRI can be ordered by the specialist on a case-by-case basis to rule out suspected serious conditions such as tumor, infection, or fracture [5].



Red Flags for Back Pain due to Deconditioning

- Unexplained weight loss or loss of appetite
- Fever and chills
- Pain at rest
- Pain that awakens the child from sleep at night
- Recent onset of bladder dysfunction
- Neurologic deficit

Short Differential Diagnosis

- Muscular strain—low back pain that can sometimes radiate to the buttocks, muscle spasms, back stiffness.
- Spondylolysis—often occurs in teenage athletes, low back pain that is aggravated by hyperextension of the spine.
- Spondylolisthesis—vertebral slippage can cause radiculopathy by irritation of the nerve roots.

Final Diagnosis

Chronic low back pain without sciatica due to muscular deconditioning

Natural History and Treatment Considerations

Nonspecific low back pain is self-limited in most patients. The natural history is gradual improvement over a few weeks. Persistent low back pain lasting more than 6 weeks needs a workup including standing AP and lateral radiographs of the painful area. If a patient demonstrates a neurologic deficit, leg pain worse than their back pain, no response to conservative treatment after 6 weeks, or radiographs that demonstrate a lesion, then referral to a pediatric spine specialist is indicated. In this case of nonspecific back pain, her back pain improved with physical therapy, and no additional workup was indicated.

Referral—Emergency, Urgent, or Routine: And to Whom?

A patient with nonspecific low back pain can be routinely referred to a physical therapist. If the back pain is not improving after 6 weeks with conservative care, then routine referral to a pediatric non-operative musculoskeletal physician, sports medicine physician if the child is an athlete, a pediatric orthopedic surgeon, and/or a neurosurgeon is appropriate. On the other hand, urgent referral to a pediatric spine specialist should be done in cases of back pain due to a specific cause such as a tumor, infection, or fracture.

Brief Summary

Low back pain is a common complaint in children and adolescents. In most cases the pain is nonspecific and self-limiting. Conservative treatment with physical therapy, NSAIDs, and rest is appropriate. However, if after 6 weeks of conservative care the pain does not improve, then standing PA and lateral radiographs of the painful area of the back and a referral to a pediatric orthopedic surgeon or neurosurgeon are indicated.

Key Features and Pearls

- Nonspecific back pain is self-limited and will resolve by 6 weeks.
- For patients with nonspecific low back pain, the primary treatment is conservative care, time, reassurance, and education.
- Possible risk factors for nonspecific low back pain in children include obesity, sedentary lifestyle, and psychosocial difficulties.
- Nonspecific back pain that does not resolve by 6 weeks needs radiographs and possible referral.

Editor Discussion

Nonspecific mechanical back pain in children and adolescents is common. A careful history and exam should be done on every patient who complains of back pain. Know the red flags of pediatric back pain. Remember that not all back pain in children stems from the spine—don't forget to consider pulmonary, renal, abdominal, and gynecological causes. In addition, obesity and depression can contribute to pediatric back pain. If nonspecific back pain does not resolve with 6 weeks of therapy, NSAIDs, and rest, standing AP and lateral radiographs of the painful area should be obtained and referral to a pediatric spine specialist considered.

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When a child complains of back pain and the worrisome causes have been excluded, this is an opportunity to evaluate their lifestyle and habits. Ask about nutrition, sleep (best to have a consistent wakeup time and minimum of 8 hours sleep), exercise, posture, screen time, carrying a heavy backpack, and other habits. If they are overweight and especially if they are obese (BMI >30), this is an opportunity to evaluate their and the family's nutrition. During the physical examination, evaluate core muscle strength. I ask the child to demonstrate ability to do 10 pushups with quality plank position. Also the child should demonstrate ability to hold a "V" position (with both lower extremities extended up in the air 30 degrees with their shoulders and chest also lifted off the table) for minimum of 10 seconds (see Chapt. 5). Know how to efficiently do a screening neurological examination, which can be done in less than 2 minutes (see Chap. 5). When we order spine radiographs, we typically obtain a standing PA and lateral film of the entire spine (cervical, thoracic, lumbar, and sacral) since this also gives us useful information of posture and balance.

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