Basic Evaluation Process for Back Pain in Children

While back pain is perhaps the most common pain complaint of adults, and all adults have had back pain at some time in their life, back pain is much rarer in children and adolescents. In this population, back pain may be the initial symptom of an underlying disease process. This is especially true in younger children (pre-teens) who are less likely to experience an overuse injury such as those that occur during strenuous exercise. The exact incidence of back pain in children is not known, however there is a gradual increase with age. Unlike adults, children are rarely if ever disabled by back pain, and in more than half of patients, a definable cause for the back pain can be found.

The cornerstone of evaluating the pediatric patient with back pain is a thorough history and physical exam, including a complete musculoskeletal and neurologic evaluation. Importance is placed on determining the nature of onset, as well as character, location, duration and radiation of symptoms. Note should be made of spinal posture (including any excessive or abnormal curves), range of motion (including any restriction), areas of tenderness, and muscle spasm. Assessment of gait, muscle strength, reflexes and sensation also are part of the initial physical. Special tests like straight leg raise and presence of pathologic reflexes like Babinski contribute more useful information.

More extensive investigation may be in order if pain does not improve within several weeks or if there are objective findings on exam, pain worsens, or new symptoms develop. Because effective treatment begins with an accurate diagnosis of the condition, a prompt diagnosis may increase the likelihood of a successful outcome. Important warning signs have been identified that, if found on history and physical exam, should alert the clinician that there is a high probability for a serious cause of back pain. Further evaluation and potential significant underlying etiology are suggested with:

- persistent or increasing pain
- pain with associated fever, malaise or weight loss
- neurologic symptoms or exam findings
- bowel or bladder dysfunction
- symptom onset at young age (4 years or younger is suspicious for tumor)
- painful left thoracic scoliosis

Initial X-ray evaluation may typically include anterior-posterior and lateral views of the area involved. Oblique view X-rays often are useful to evaluate for spondylolysis. Further studies would be carried out if indicated by the previous evaluation. A CBC, sedimentation rate and urinalysis may be part of the original screening tests beyond the H&P and X-rays. An elevated CBC or sedimentation rate suggests the presence of an inflammatory or infectious process. Results of initial evaluation should be used to direct further imaging studies, which may include MRI, CT scan, tomogram or bone scan. The use of these studies is dictated by differential diagnosis.

Treatment of back pain in children is diagnosis-specific. Conservative treatment (activity modification, mild analgesics) is appropriate initially if there are no neurologic signs or symptoms (radicular pain, muscle weakness, gait abnormalities, sensory changes, bowel and bladder abnormalities). Regardless of the cause, some form of pain reliever may be required in most cases. Treatment may begin with simple analgesics like acetaminophen (Tylenol) and ibuprofen (Advil).

A targeted differential diagnosis can be generated by dividing children into two age groups: prepubertal and pubertal. In prepubertal children, the differential includes infection, in the form of diskitis or osteomyelitis, or tumor of the spinal column or spinal cord. In pubertal children, the differential includes tumor of the spinal column or spinal cord, spondylolysis or spondylolisthesis, herniated disk, lumbar strain from overuse, or Scheuermann’s disease. Specific symptom associations that are important to identify include fever and back pain (possible underlying infection, neoplasm, or inflammatory disease); neurological symptoms (may signify underlying disc herniation); excessive lordosis (possible spondylolysis or spondylolisthesis); and excessive kyphosis (possible Scheuermann’s disease).
Another useful classification is the separation of back pain and its causes into one of four categories:

- Mechanical problems include overuse injury, back-pack syndrome, direct trauma and herniated discs.

- Developmental abnormalities include spondylolysis, spondylolisthesis and Scheuermann’s kyphosis.

- Inflammatory and infectious diseases including diskitis, vertebral osteomyelitis, pyelonephritis, juvenile rheumatoid arthritis (JRA), and ankylosing spondylitis (AS) may occur in younger patients (typically pre-teens) and may be associated with fever or laboratory abnormalities.

- Neoplastic disorders include primary and metastatic lesions. Not all tumors of the vertebral bodies and spine are malignant. Back pain may be caused by benign lesions such as osteoid osteoma, hemangioma and giant cell tumors. Symptoms of spinal tumors generally develop slowly and worsen over time. The main symptom is chronic back pain that may be worse at night and unaffected by rest or activity. Other symptoms may include sciatica, numbness, weakness, fever and bowel/bladder issues. Imaging (X-rays, bone scans using CT and MRI) is useful in diagnosis.

Another category of consideration may be the psychosocial or psychological components or contributions to back pain. Children may mimic the behavior and symptoms of adults and older children in the family. Symptoms may indicate other problems in the home or at school. Children sometimes respond to stress with physical symptoms. There is even a population of pediatric fibromyalgia. However, these diagnoses should be made with caution after ruling out other diagnosable conditions.

If a child presents with persistent back pain that is not relieved by rest, decrease in activities, and simple analgesics and anti-inflammatory drugs, consider referring the child to a spine specialist. If there are associated constitutional symptoms, referral should not be delayed.