

Scheuermann's Disease

See also Back Pain (Peds)

See also Scoliosis

Background

1. Definition:

- Structural deformity of spine
- Most common cause of hyperkyphosis in adolescents
- Causes a progressive, rigid kyphosis
- Usually in thoracic region
- Typical (Classic) Scheuermann's
 - Hyperkyphosis in thoracic spine w/characteristic anterior wedging of 3 or more adjacent vertebral bodies
 - Most common
- Atypical Scheuermann's
 - Located in lumbar spine or thoracolumbar junction
 - Causes decr lordosis
 - May involve fewer vertebral segments

2. General information

- Usually discovered at first pubertal growth spurt
- Deformity progresses until skeletal maturity
 - Symptoms freq resolve when progression of curve ceases
- Often associated w/non-structural hyperlordosis of lumbar spine and scoliosis below kyphosis
 - Seen in 1/3 of cases
- Serious complications rare, seen w/more severe kyphosis
 - Thoracic cord compression
 - Pulmonary compromise

Pathophysiology

1. Osteochondritis of vertebral body ring apophysis

- Causes decr anterior growth and vertebral wedging
- Etiology unknown

2. Theories incl

- Avascular necrosis of ring apophysis
- Herniation of disc material into vertebral body
- Abnormal collagen matrix of vertebral endplate cartilage
- Osteoporosis

3. Strong genetic component suggested

4. Repetitive stress/ trauma a factor

- Hard laborers
- Athletes

5. Incidence/ prevalence

- 1-8% of general population
- Most common cause of hyperkyphosis in adolescence
- Average age at dx 11-14 yrs
- Equal in males and females
 - Lumbar Scheuermann's more common in male athletes 2:1

6. Risk factors

- Athletic populations susceptible
 - Classic: Aquatic ski jumpers
 - Repetitive flexion and axial loading
 - Atypical (lumbar): sports requiring repetitive flexion/ extension
 - Football
 - Wrestling
 - Weight lifting
 - Gymnastics
 - Diving

Diagnostics

1. History

- Chief complaint
 - Adolescents present w/concerns about deformity
 - Adults present w/back pain
- HPI
 - Back fatigue especially end of day
 - Pain exacerbated by sitting, standing, exercise
 - Classic Scheuermann's
 - Back pain located at or below apex of kyphosis
 - Atypical Scheuermann's
 - Back pain at involved segment
 - Participation in sports or occupation involving repeated flexion/ extension or axial loading of spine
 - Onset of puberty w/recent incr in growth rate
 - Pts w/severe kyphoses may report
 - Neurologic symptoms
 - Spastic paraparesis
 - Gait disorder
 - Lower extremity numbness
 - Clonus
 - Respiratory compromise (curves $>100^\circ$)

2. Physical examination

- Hyperkyphosis in thoracic region
 - Deformity exacerbated in flexion
- Kyphosis does not resolve w/hyperextension of spine
 - Differentiates Scheuermann's from postural kyphosis
- Sharply angular kyphoses
 - Perform lower extremity neurological exam
 - Assess cardiopulmonary status
- Check for compensatory lumbar hyperlordosis and mild scoliosis below kyphosis
- Atypical Scheuermann's
 - Decreased lumbar lordosis

3. Diagnostic studies

- Standing A-P and lateral radiographs of thoracic or lumbar spine based on location of abnormal curve and symptoms

4. Diagnostic criteria

- Anterior wedging of $>5^\circ$ of 3 or more adjacent vertebrae

- Kyphosis $>45^\circ$ by Cobb angle (upper range of normal = $40-45^\circ$)
- Vertebral endplate irregularities
- Disc space narrowing
- Schmorl's nodes
 - Caused by herniation of disk material into vertebral body
- Atypical Scheuermann's
 - Decr lumbar lordosis or flattening at thoracolumbar junction
 - Anterior wedging may involve fewer than 3 vertebrae
- Young pt w/low back pain
 - Oblique views of lumbar spine to r/o spondylolysis/ spondylolisthesis (SOR:C)
- MRI thoracic/ lumbar spine
 - If pt has neurologic symptoms suggestive of cord compression/ disc rupture
 - To define anatomy for surgical intervention

Therapeutics

1. Indications for tx

- Pain
- Progressive deformity
- Neurologic symptoms
- Cardiopulmonary compromise
- Cosmesis

2. Initial tx

- Rest
- NSAIDs or non-narcotic analgesics
- Postural and flexibility exercises
- Physical therapy

3. Bracing: indicated in skeletally immature ps w/curves $>50-60^\circ$

- Modified Milwaukee Brace (CTLSO)
 - 20 hrs/day for 12-18 mos
 - May be removed for athletic activity
 - Continue wearing brace 12 hrs/day until skeletally mature
- Lumbar (atypical) Scheuermann's
 - Hyperextension lumbar spinal orthotic for 3-12 mos
- Athletes
 - Brace w/ 15° of lordosis plus
 - Rest, NSAIDs, PT
 - May return to play in 1 month

4. Surgical indications

- Pain
- Poor cosmesis
- Cardiopulmonary difficulty
- Neurologic compromise
- Failure of brace tx
- Usually for curves $>75^\circ$ w/unacceptable pain/ deformity
- Surgical techniques
 - Anterior release
 - Posterior instrumentation/ fusion

- Combined approach
- Pts should be immobilized for several mos
- W/hold from athletics (except swimming) for 1 yr after surgical correction

Follow-up/ Prognosis

1. Radiographic exam every 4-6 mos in growing child to monitor curve progression
2. Consider orthopedic consult for curves $>50^\circ$
3. Prognosis good
 - Pts report more back pain
 - But do not require more analgesia or miss more days of work than unaffected population
 - Studies show mild improvement of kyphosis and slowed progression w/bracing (SOR:C)
 - Surgical: usually results in significant improvement of deformity

Prevention

1. Young athlete w/back pain >3 wks warrants radiographic evaluation (SOR:C)

Patient Information

1. <http://www.orthogate.org/patient-education/thoracic-spine/scheuermanns-disease.html>

References

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