

COMMON CAUSES OF ARTHRALGIAS

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OBJECTIVES

- Recognize common causes of joint pain

TOPICS

- ◉ Growing Pains
- ◉ Benign Joint Hypermobility Syndrome
- ◉ Patellofemoral Pain syndrome or Chondromalacia Patellae syndrome
- ◉ Ehler's Danlos Syndrome
- ◉ Pain amplification syndrome
- ◉ Juvenile Idiopathic Arthritis

GROWING PAINS

- ◉ Age of onset: 4 to 12 years
- ◉ Affects males and females equally
- ◉ 10-20% of school age children will complain of growing pains.

SYMPTOMS OF GROWING PAINS

- Deep, aching, crampy pain
 - Usually bilateral
 - Thigh and calf
 - May be precipitated by exercise
- Evening to late night
- Never presents with morning pain
- Never presents with a limp

WORK-UP FOR GROWING PAINS

- ⦿ Laboratory studies should be normal
- ⦿ X-ray studies should be normal

TREATMENT OF GROWING PAINS

- Family education
 - Benign course with no significant sequelae
- Supportive care
 - Pain usually relieved with massage
 - If frequent attacks, tylenol/motrin prior to sleep
 - Passive stretching

BENIGN JOINT HYPERMOBILITY SYNDROME (BJHS)

- Frequency in general population
 - 8-20% in Caucasian
 - Higher frequency in Asians, African and Middle Eastern Descent
- Female to male ratio: 2:1
- Family history of hypermobility is common
 - Appears to have a strong genetic component with an autosomal dominant pattern
- Common age range: 3-10 years of age
 - Prevalence decreases with age

SYMPTOMS OF BJHS

- ⦿ Intermittent pain
 - May affect one or multiple joints
 - May be generalized or symmetric
- ⦿ Mostly in late afternoon and night
 - Often wakes children up at night
 - Morning stiffness is uncommon
- ⦿ Precipitated by certain activities
 - Physical activity or repetitive use
 - Jumping, running, gymnastics and ballet
- ⦿ Mild joint effusions can be present

INITIAL PROPOSED CRITERIA FOR BJHS

- ⦿ Three of five are required to establish a diagnosis of hypermobility
 - Touch thumb to volar forearm
 - Hyperextend metacarpophalangeal joints so fingers parallel forearm or passive dorsiflexion of the MCP joint to 90 degrees
 - > 10 degree hyperextension of elbows
 - >10 degree hyperextension of knees
 - Touch palms to floor with knees straight

BEIGHTON SCALE

- Requires four or more of nine tests (one point for each side)
 - Passive dorsiflexion of 5th MCP joint beyond 90 degrees with forearm flat
 - Passive apposition of the thumb to flexor aspect of the forearm
 - Passive hyperextension of the elbows >10 degrees
 - Passive hyperextension of the knees > 10 degrees
 - Forward flexion of the trunk, with knees straight, so that the palms rest easily on the floor

REVISED BEIGHTON

⦿ Requires:

- Two major criteria
- One major criteria and two minor criteria
- Four minor criteria

CRITERIA FOR BJHS

○ Major

- Beighton score of at 4/9
- Arthralgias for >3 months in four or more joints

CRITERIA CONTINUED

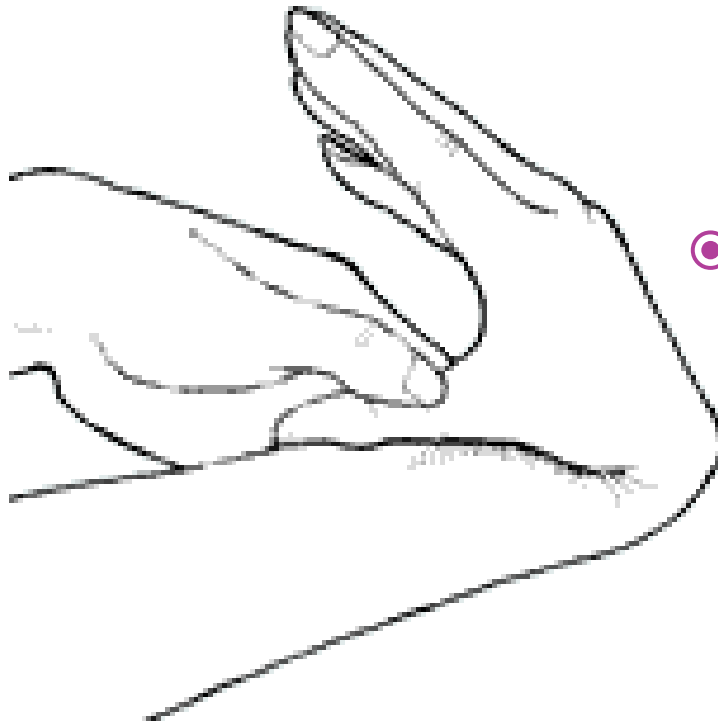
◉ Minor Criteria

- Beighton score of less than 4/9
- Arthralgias > 3 months in 1-3 joints or back pain
- Dislocation/subluxation in more than one joint
- Soft-tissue rheumatism with three or more lesions
 - Bursitis or tenosynovitis
- Marfanoid habitus
- Abnormal skin
- Eye signs
- Varicose veins or uterine/rectal prolapse

OTHER NONCRITERIA FEATURES OF BJHS

- ⦿ Put heel behind head
- ⦿ Excessive internal rotation of hip
- ⦿ Extensive ankle dorsiflexion
- ⦿ Excessive eversion of the foot
- ⦿ Passively touch elbows behind back

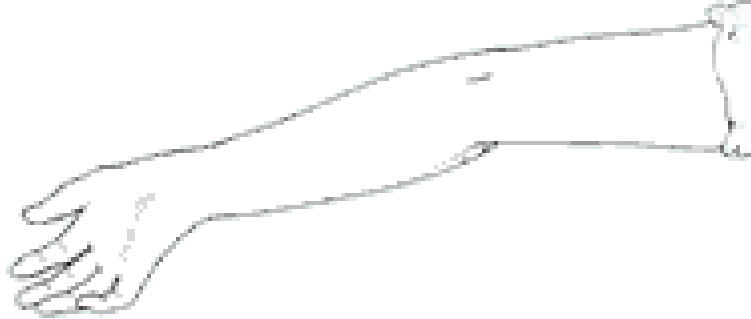
DIAGRAMS OF BJHS



- Apposition of the thumb to the flexor aspect of forearm

DIAGRAMS CONTINUED

- Hyperextension of elbow > 10 degrees



DIAGRAMS CONTINUED



- Hyperextension of Knee > 10 degrees

DIAGRAMS CONTINUED



- Ability to touch palms flat to floor with knees straight

DIAGRAMS CONTINUED



- Passive dorsiflexion of the MCP joint to 90 degrees

TREATMENT

- Reassurance
 - Nonprogressive, noninflammatory condition
- For acute symptoms
 - NSAIDS such as motrin and acetaminophen
 - Massage or warm baths
- Physical therapy for strengthening
- Avoidance of activities such as ballet or gymnastics

PROGNOSIS

- Symptoms improve with age
 - Joints become less lax over time
- Increased frequency of:
 - Acute ligament and soft tissue injury
 - Overuse injury
 - Joint instability
 - Uterine and rectal prolapse
 - Possible increased risk of fracture or scoliosis

PATELLOFEMORAL PAIN SYNDROME OR CHONDROMALACIA PATELLAE

- ◉ Age at onset: Adolescence to young adulthood
- ◉ Sex ratio: Girls>Boys
 - Most common in teenage girls

PATELLOFEMORAL PAIN SYNDROME OR CHONDROMALACIA PATELLAE

- ⦿ Insidious development of retropatellar knee pain
- ⦿ Pain initially occurs with activity that stresses the quadriceps
 - Deep knee bends
 - Climbing or descending stairs
 - Prolonged sitting
- ⦿ Reproducing pain:
 - Compression of the patella and by palpitation along its inferomedial edge
 - Upward movement of the patella is restrained while the quads are being contracted

DIAGNOSIS

- Physical exam
 - Knee flexion is accompanied by crepitus
- Laboratory studies are normal
- Plain x-rays films are usually normal
 - May have small effusion
- MRI of knee
 - Decreased signal intensity
 - Irregularity with focal thickening of the articular cartilage

DIAGRAM



TREATMENT

- Can be chronic and difficult to treat
- Initially activities that provoke pain should be avoided
 - Once pain improved may gradually increase activity
- PT to strengthen muscles around knee
- Braces with activity
 - Sports braces with hole at knee

EXAMPLES OF SPORTS BRACES



ARTHRALGIAS VS ARTHRITIS

⦿ Arthralgias

- Pain
- No inflammation

⦿ Arthritis

- Swelling or effusion
- Limitation on motion
- Pain on motion
- Tenderness on palpation
- Heat in a joint
- Occurs in one or more joints

ARTHRALGIAS VS ARTHRITIS

○ Pain of Arthralgias

- Usually occurs as the day progresses
- Worsens with activity

○ Pain of arthritis

- Morning stiffness
- Worsens with prolonged sitting
- Improves with activity

JUVENILE IDIOPATHIC ARTHRITIS

- One of the most common rheumatic diseases of childhood
- Significant cause of childhood chronic illness
- Distinct entity from Adult Rheumatoid Arthritis

ETIOLOGY AND PATHOGENESIS

- Genetic predisposition
 - Interactions of multiple genes
- Multiple disease onset triggers
 - Altered immunity, infections, trauma, stress
- Activation of autoreactive T cells
- B cells hyperactivity
- Release of inflammatory mediators
 - Cytokines (TNF, IL-1, IL-6, IL-18), prostaglandins
 - Damage cartilage and vessel wall

ETIOLOGY AND PATHOGENESIS

- Hormonal factors
- Infection

NOMENCLATURE

- Juvenile Rheumatoid Arthritis
 - Systemic
 - Polyarticular
 - Pauciarticular

- Juvenile Idiopathic Arthritis
 - Oligoarticular
 - Persistent
 - Extended
 - Polyarticular RF -ve
 - Polyarticular RF +ve
 - Systemic
 - Psoriatic arthritis
 - Enthesitis related
 - Other/Non-differentiated

ACR CRITERIA FOR CLASSIFICATION OF JIA

- ◉ Age of onset < 16 years
- ◉ Arthritis in one or more joints
 - Swelling or effusion
 - Limitation of range of motion, tenderness or pain on motion, heat in a joints
- ◉ Duration longer than 6 weeks
- ◉ Exclusion of other forms of arthritis
 - Infection
 - Other rheumatic diseases
 - Malignancies
- ◉ Onset type defined by type of disease in 1st 6 months

EHLER'S-DANLOS

- Rare genetic disorder
 - Defect in collagen synthesis
 - Fibronectin abnormality
 - Multiple defects involved
 - Fibrous proteins: COL1A1, COL1A2, COL3A1, COL5A1, COL5A2, and TNXB
 - Enzymes: ADAMTS2, PLOD1
- Affects 1 in 5000
- Males and females equally affected

EHLERS-DANLOS

- Hypermobility
- Hyperelasticity of skin
- Vascular fragility and aneurysms (aorta, medium sized muscular arteries and cerebral arteries)
- Large eyes
- Lobeless ears
- Bilateral club feet
- Dislocated hips
- Peridontal disease
- Abnormal platelet aggregation

EHLER'S-DANLOS CONTINUED

- 13 major types
 - Hypermobility
 - Classical
 - Vascular
 - Kyphoscoliosis
 - Arthrochalasia
 - Dermatosparaxis

HYPERMOBILITY TYPE

- ⦿ Affects 1:10,000
- ⦿ Symptoms
 - Loose, unstable joints
 - Soft, velvety skin
 - Chronic degenerative joint disease
 - Advanced premature osteoarthritis
 - Mitral valve prolapse

PAIN AMPLIFICATION SYNDROME