Juvenile Idiopathic Arthritis:

When it is not "just" Growing Pains

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Disclosures

- Speakers' Bureau
  - Amgen
  - Abbvie

Outline

- Introduction
- Diagnosis of Joint Pain
- Classification/Diagnosis of Juvenile Idiopathic Arthritis (JIA)
- Treatment of JIA

"Kids Don't Get Arthritis"

"They will grow out of it"

"JIA is just RA in a little person"

"My child has RA because the arthritis blood test was positive"

"JIA will become RA once the child becomes an adult"

"I want to treat my child with natural remedies"

Pediatric Rheumatic Diseases

- Juvenile Idiopathic Arthritis (JIA)
- Connective-Tissue Diseases
  - Systemic Lupus Erythematosus
  - Mixed Connective Tissue Disease
  - Antiphospholipid Syndrome
  - Juvenile Dermatomyositis
  - Scleroderma
  - Henoch-Schönlein Purpura- IgA Vasculitis
  - Medium- and Large-Vessel Vasculitis

Juvenile Idiopathic Arthritis

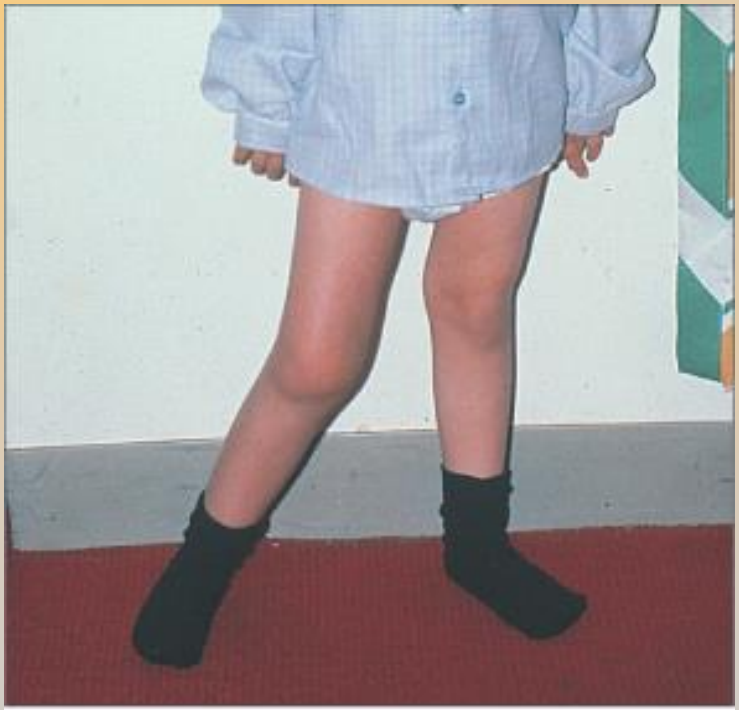
- JIA describes condition of chronic synovitis in children of which there are distinct subgroups
- JIA is the most frequent major rheumatic disease of children (same number as diabetes mellitus-type 1, four times more than sickle cell or cystic fibrosis)
- Incidence: 57-220 cases/100,000 per year
- Prevalence estimates 10,300 – 60,900 in the US population in patients under age of 16
- 40-45% of patients still have active disease after 10 years
- Up to 50% of JIA patients have active disease that persists into adulthood
  - Estimated 35,000 to 50,000 people over 16 have active JIA in US

http://www.cdc.gov/arthritis/basic/childhood.htm

Objective Signs of Arthritis

- Joint Swelling
  - Synovial hypertrophy
  - Increased amounts of synovial fluid
  - Swelling of periarticular tissues
- Joint Pain
  - On motion
  - On palpation (tenderness)
- Loss of Joint Motion
  - Stiffness of joints
- Joint Warmth
- Joint Erythema

Synovitis in JIA



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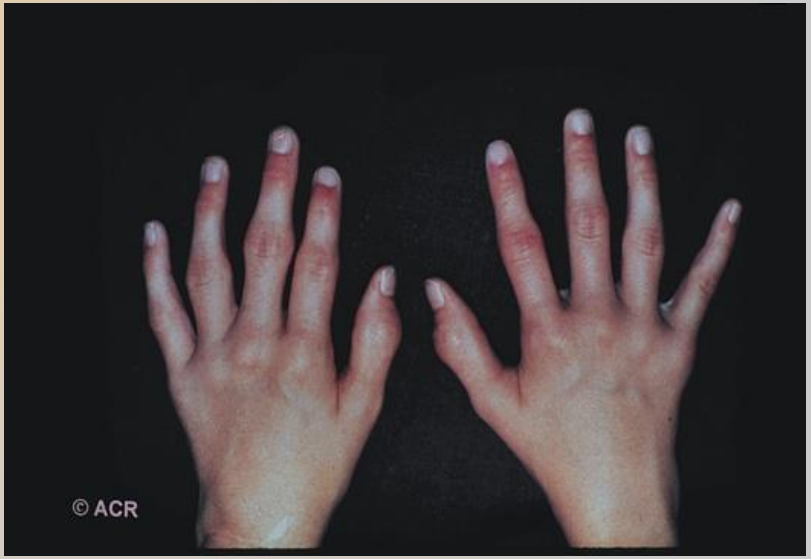

Diagnostic Criteria for JIA (ACR)

- Documented arthritis of 1or > joints for 6 weeks or longer
  - Presence of 1 swollen joint or 2 of following: joint tenderness, decreased range of motion (ROM), pain on ROM or joint warmth for at least 6 weeks without another cause in children younger than 16 years of age
- Exclusion of other conditions associated with childhood arthritis (over 100 other causes must be excluded)
  - Other rheumatic dz
  - Infectious diseases (viral)
  - Childhood malignancies
  - Nonrheumatic conditions of bone/joints
  - Miscellaneous conditions
- Other factors for possible future classification:
  - RF, ANA, HLA-B27
  - Gender
  - Age at onset
  - Iridocyclitis (chronic or acute)
  - Sacroiliitis
  - # / Distribution of affected joints
  - FHX
  - Response to drug therapy
  - Immunologic abnormalities

Growing Pains (benign nocturnal limb pains)

- Usually at night
- Ages 3-8
- Cause unknown
  - Thought due to imbalance between bone length & muscle strength
- Pain in one or both legs
- Swelling, tenderness, redness or limping are NOT symptoms
- Usually short duration ~ 30 minutes
- Treatment – hot packs, warm baths, APAP or ibuprofen

Hochberg et al, Rheumatology, 3rd Ed., Australian Rheumatology Association

Common Musculoskeletal Causes of Limp in Children

Age	1-4 years	5-10 years	11-15 y.o.
Vascular		Legg-Calve-Perthes Kohler's disease	Osteocondritis dissecans Frieberg's disease
Infection	Septic arthritis		Septic arthritis (gonococcal)
Trauma	Fracture, child abuse		Osgood-Schlatter disease
Tumor	Leukemia	Osteoid asthma	Osteosarcoma Osteoid osteoma
Anomaly	Hip dysplasia	Discoid meniscus	Tarsal coalition
Inflammatory	Oligoarticular JIA	Polyarticular JIA	Polyarticular JIA Enthesitis-related arthritis
Neuromuscular	Cerebral palsy Muscular dystrophy		

Subtypes of Juvenile Idiopathic Arthritis -ILAR

Lovell, Primer on Rheumatic Diseases,
13th ed. Page 143

JIA subtype	Proportion of Patients, %
Systemic Arthritis (starts with spiking fever, rash)	2-17%
Oligoarthritis(<5 joints in 1st 6 mo) Persistent oligoarthritis course Extended polyarticular course	12-29%
Polyarthritis Rheumatoid Factor (RF) negative (> 4 joints in 1st 6 mo)	10-28%
Polyarthritis RF positive	2-10%
Enthesitis-related Arthritis (formerly called spondyloarthropathy)	3-11%
Psoriatic arthritis	2-11%
Undifferentiated–fits none or >1 category	2-23%

Subtypes of Juvenile Idiopathic Arthritis -ILAR

A 2-year-old girl presents with history of a daily spiking fever, salmon colored rash which is evanescent and a pericardial effusion. She is ANA positive and RF negative. Sedimentation rate and platelet count are markedly elevated.

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Systemic onset JIA

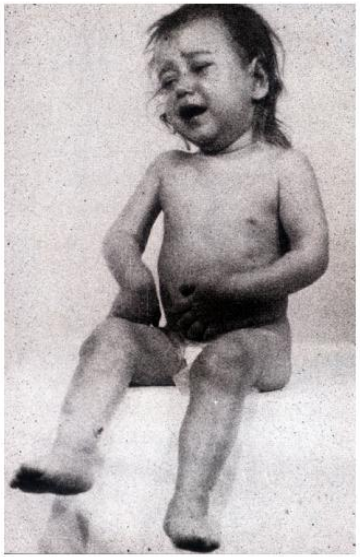
- 2-17% of JIA population
- Arthritis with or preceded by daily fever of at least 2 weeks, quotidian for at least 3 days plus at least one of the following: rheumatoid rash, generalized LAD, hepato- or splenomegaly and serositis
- Usually affects younger children
  - As young as 6-7 months old
  - Peak onset 1-6 years old
- Slight male predominance or equally affected
- RF/ANA negative
- Severe arthritis in 25%
- Arthritis typically polyarticular – affecting both large & small joints

Systemic Onset Disease

- 50% of patients develop severe, treatment resistant-polyarticular disease
- Systemic manifestations may precede arthritis by weeks or years
  - Daily mono- or biphasic spiking fever pattern >101°F
  - Rash: salmon pink, blanching, discrete, erythematous macules on trunk or joints, transient (min-few hours)
  - Hepatosplenomegaly and/or lymphadenopathy can be pronounced
  - Serositis (pericardial, pleural or peritoneal)
  - Complications: DIC, pericarditis, tamponade, macrophage activation syndrome (MAS)

Systemic Onset Disease

- **Diagnosis of Exclusion**
  - MUST rule out malignancy (ALL, neuroblastoma), acute/chronic infections, reactive illnesses, acute/chronic inflammatory conditions
- Hallmark
  - Leucocytosis
  - Thrombocytosis
  - Anemia
  - Look for DIC
  - Small and larger pericardial effusions
    - small to tamponade
    - 90% of patients
    - Differentiate from Kawasaki



Young, very ill patients

Klippel et al, Rheumatology, 2nd ed

Macrophage Activation Syndrome (MAS)

- Rare, life-threatening complication of Systemic Onset – Juvenile Idiopathic Arthritis (SOJIA) but seen in all forms of rheumatic disease
  - AKA: Secondary or Acquired Hemophagocytic Syndrome; Hemophagocytic Lymphohistiocytosis
- Increased activation & expansion macrophages & CD8+ Tcells leading to overwhelming inflammatory response and demonstration of histiophagocytois in bone marrow
- Triggers: preceding viral illness; addition of or change in medications (esp. NSAIDs, suflasalazine, more recently – etanercept)
- Acutely ill – HSM, LAD, purpura, prolonged PT, PTT, elevated fibrin split products, hyperferritinemia, hypertryglyceridemia

Hochberg et al, Rheumatology, 3rd ed

Macrophage Activation Syndrome (MAS)

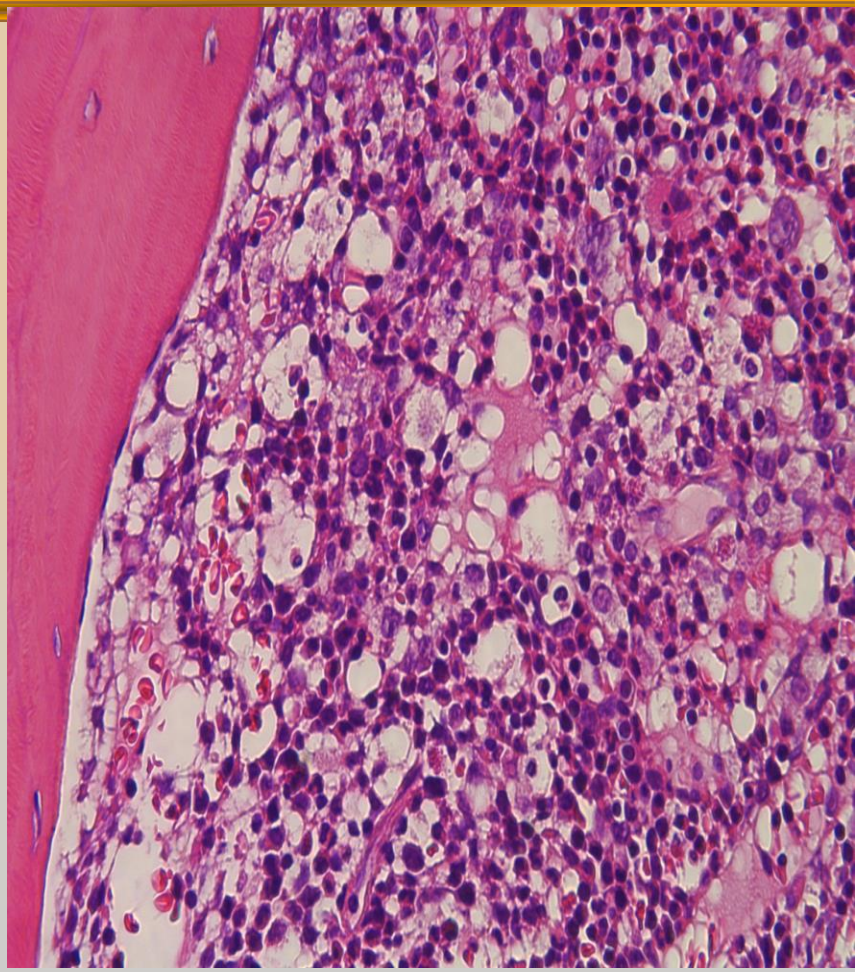
- Sed rate often low (* clue to diagnosis of MAS vs. exacerbation of SOJIA)
  - Due to hypofibrinogemia secondary consumptive coagulopathy and hepatic dysfunction
- Mortality 8-22%
- Treatment: pulse methoprednisolone 30 mg/kg up to 1 gram x 3 days then 2-3 mg/kg/Q6H
  - (Sawhney, *Arch Dis Child*, 2001)
- Second line - IV cyclosporine A (2-7 mg/kg/day)
  - (Mouy, *J Pediatr*, 1996)

Macrophage Activation Syndrome (MAS)

- Third line treatment:
  - Etoposide (VP-16) (Fishman, *Br J Rheumatol* 1995
  - Anti-thymocte globulin (ATG) (Coca, Clin Immunol, 2009)
  - IV Ig (Tristano, *J Clin Rheumatol*, 2003)
  - Anti-TNF alpha agents
  - Rituximab (Balamuth, *J Pe diatr Hematol/Oncol*, 2007)
  - Anakinra (Miettuenen, *Rheum*, 2010)

Macrophage Activation Syndrome (MAS)

- Pathognomonic feature
  - Bone marrow aspiration: numerous, well differentiated macrophages (or histiocytes) actively phagocytosing hamatopoitec elements



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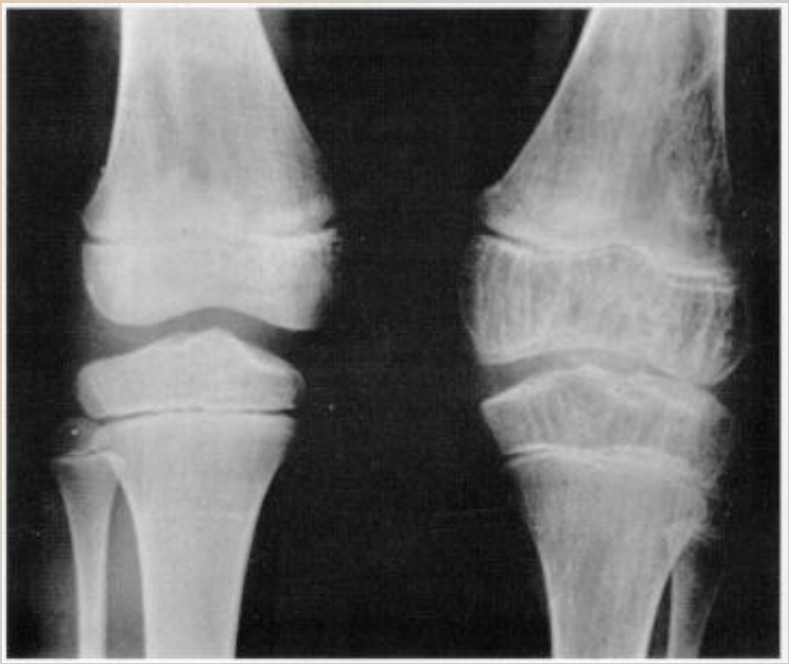
Oligoarticular JIA (oJIA)

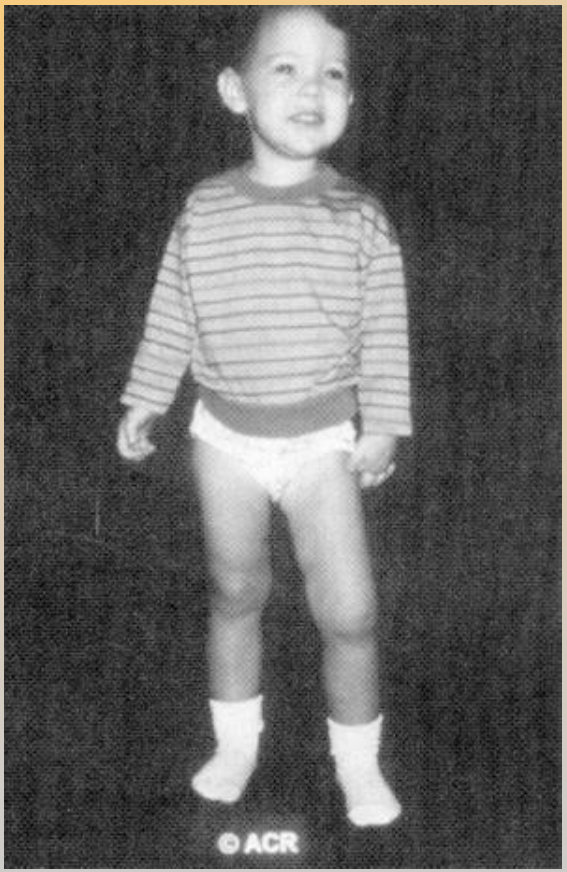
- 24-58% of patients
- Arthritis of few joints (knees, ankles, elbows)
- Females more affected than males (4:1)
- Early childhood onset (1-5)
- ANA + 60%, RF-negative
- At greatest risk for developing chronic eye inflammation (30-50%)
  - Anterior chamber
  - Minimal, if any, symptoms in 80% of children

Oligoarticular JIA (oJIA)

- Radiographs of the knees of a boy with monarthritis of the left knee. There is marked osteopenia on the left, with coarsening of the trabeculae and enlargement of the epiphyses. The joint space is narrowed laterally, and there is lengthening of the left leg with a moderate valgus deformity. Erosions are not present



Oligoarticular JIA, subcategory persistent



- Oligoarticular juvenile idiopathic arthritis with involvement of the left knee

Oligoarthritis, subcategory persistent

- Arthritis in ≤ four joints at any time during onset or course of the disease
- Best overall articular outcome of all categories JIA
- Up to 50% of patients with persistent oJIA will have monarticular involvement in knee
- Severity joint symptoms usually mild
  - Present with normal or near normal physical function, joint swelling and loss of motion in knee

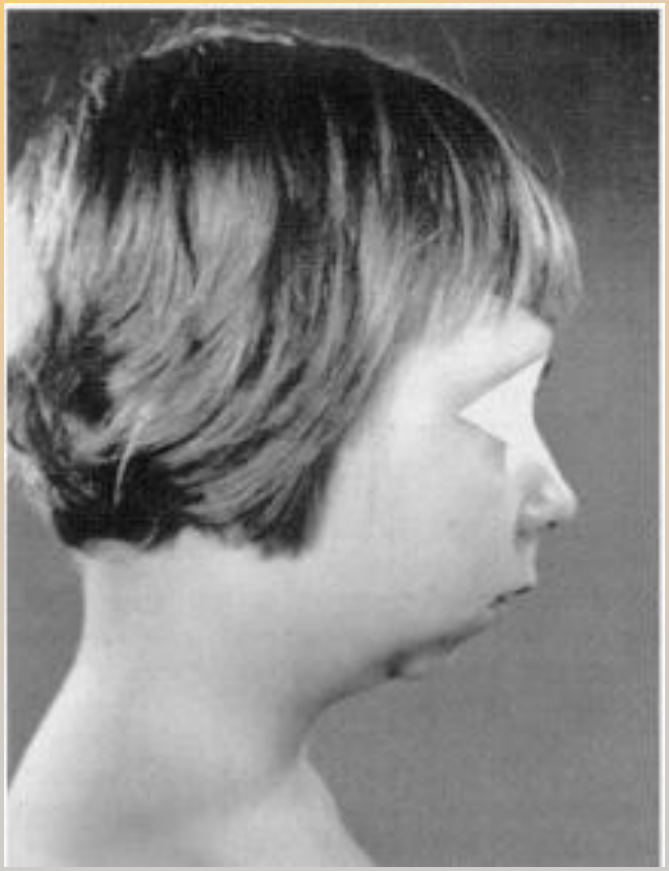
Oligoarthritis, subcategory extended

- Arthritis in ≤ four joints 1st 6 months of disease but affecting cumulative total of ≥ 5 joints after 1st 6 months
- Up to 50% of oJIA patients evolve to extended category
  - 30% do so in the 2 years after disease onset
- Risk factors development extended (more extensive and severe articular involvement)
  - Arthritis wrists, hand or ankle
  - Symmetric arthritis
  - Arthritis in more than one joint
  - Elevated ESR
  - Positive ANA

Polyarticular JIA (poJIA)

- Rheumatoid Factor Positive (2-10%)
  - Arthritis $\geq$ 5 joints during 1st 6 months and positive test for RF at least twice 3 months apart
  - Symmetric polyarthritis of small & large joints
  - Females affected more often than males
  - Late childhood onset (rarely before 8 y.o.)
  - ANA + in 50-75%
  - Rheumatoid nodules common over pressure points (elbows, heels, 1st MTPJ, MCP's, extensor surfaces fingers)
  - Erosions more common (resembles adult RA)
  - Rapidly progressive joint destruction within 6-12 months of onset – high chance of permanent disability

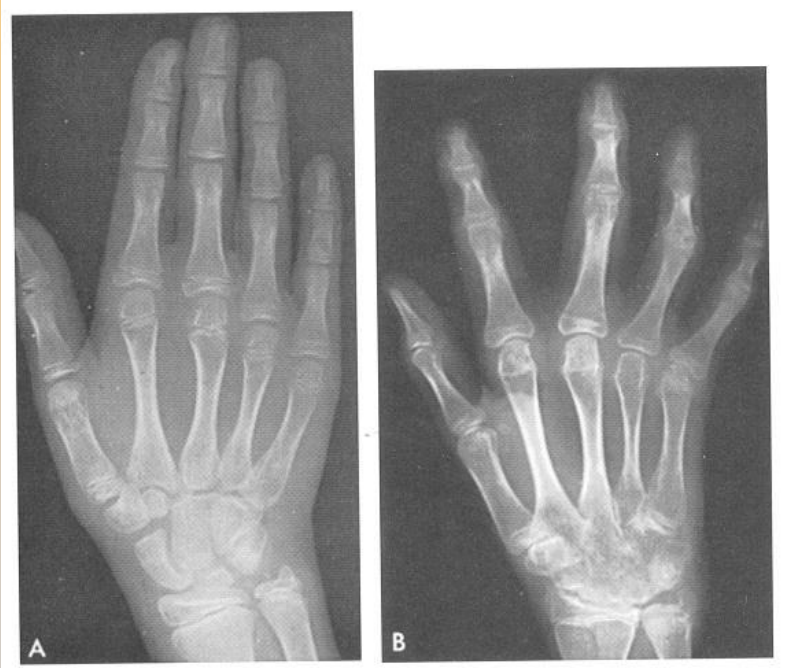
Polyarticular JIA (poJIA)



- Micrognathia in an 11-year-old girl whose polyarthritis began at 18 months of age. Examination showed no restriction of motion of the temporomandibular joints. Extension, rotation, and lateral bending of the cervical spine were absent, and flexion was limited to 10 degrees
- Affects entire spine –not just C1-C2 joint as in adults

Hochberg et al, Rheumatology, 3rd ed

Progression of joint destruction in a girl with rheumatoid factor– positive poJIA

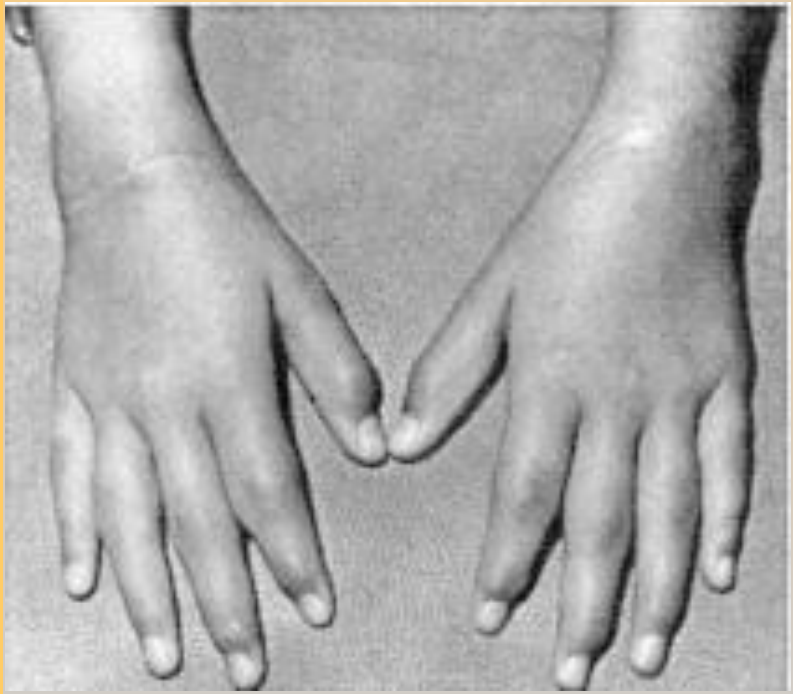


- **A,** x-ray of the hand at onset. **B,** x-ray 4 years later, showing a loss of articular cartilage and destructive changes in the joints and destruction and fusion of wrist bones.

Polyarticular JIA (poJIA)

- Rheumatoid Factor Negative (10-28%)
  - Arthritis $\geq$ 5 joints during 1st 6 months with negative tests for RF
  - Symmetric polyarthritis small & large joints
  - Females more affected than males
  - Early or late childhood onset
  - ANA positive in 25%
  - Rheumatoid nodules uncommon
  - Severe arthritis in 10-15%
  - Usually little joint destruction

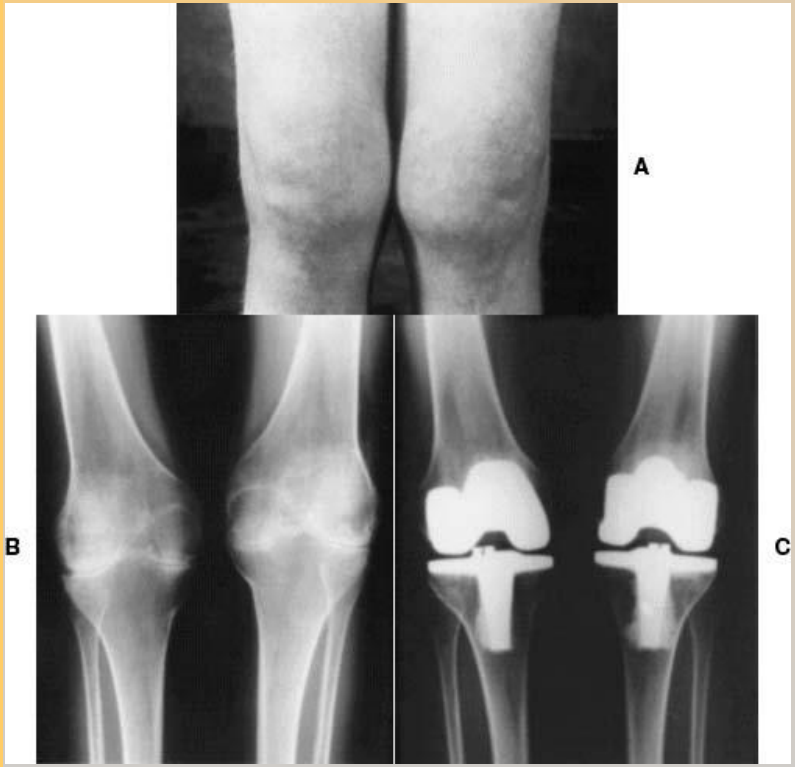
RF-negative Polyarticular JIA



- Hands and wrists of a girl with rheumatoid factor-negative polyarticular juvenile rheumatoid arthritis. There is symmetric involvement of the metacarpophalangeal joints, proximal interphalangeal joints, and distal interphalangeal joints. Both wrists are affected.

- Hallmark – symmetric synovitis

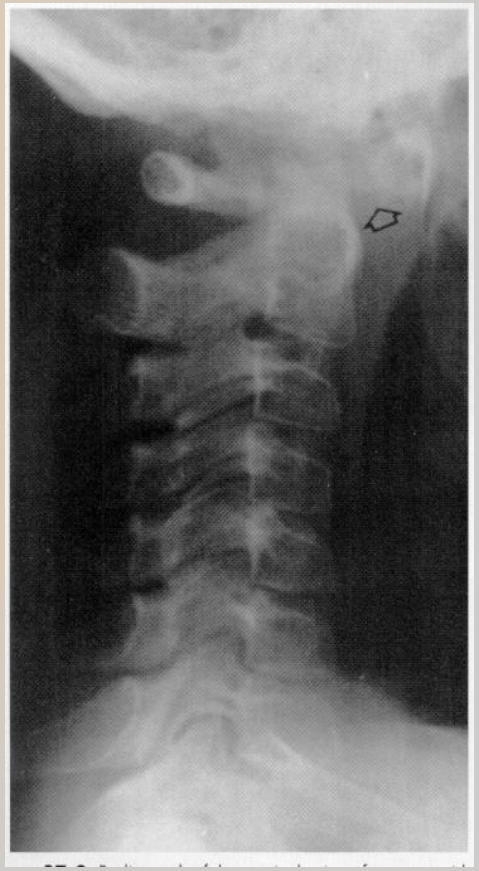
Polyarticular JIA



- Polyarticular involvement in 19-year-old man who required bilateral total knee arthroplasty. **A,** preoperative clinical appearance. **B,** preoperative roentgenographic appearance. **C,** postoperative roentgenographic appearance.

Cervical Disease in Polyarticular JIA

- Radiograph of the cervical spine of a young girl with polyarthritis. There is an atlantoaxial subluxation *(arrow)* and fusion of the C2C3 apophyseal joint. Three years later, subluxation developed at the C3-C4 vertebral interspace.



Enthesitis-related arthritis (eJIA)

- Seen in 3-11% of JIA patients
- Arthritis and enthesitis or arthritis or enthesitis plus any two of the following:
  - Sacroiliac joint tenderness and/or inflammatory lumbosacral pain
  - + HLA-B27 Antigen
  - Physician diagnosed HLA-B27-associated disease in 1st or 2nd degree relative
  - Symptomatic anterior uveitis
  - Male > 6 y.o. at onset of arthritis or enthesitis
  - Exclusions: Psoriasis or h/o psoriasis in patient or 1st degree relative, +RF or h/o sJIA

Psoriatic Arthritis (pJIA)

- Seen in 2-11% of JIA population
- Arthritis and psoriasis or arthritis and at least 2 of the following:
  - Physician diagnosed psoriasis in 1st degree relative
  - Dactylitis
  - Nail abnormalities (pitting or oncyholysis)
- Only ~ 10% of these patients present with rash and arthritis at the same time
  - Rash may not appear for years after onset of arthritis or may precede the arthritis

Undifferentiated JIA (uJIA)

- Affects 2-23% of JIA population
- Arthritis does not fulfill any of the above categories or fits into more than one category
  - 60% failed to demonstrate characteristics that fulfilled criteria for one of the other categories
  - 40% meet criteria from more than one category
    - Most common overlap – Polyarticular JIA, RF negative with either enthesitis related JIA or psoriatic JIA

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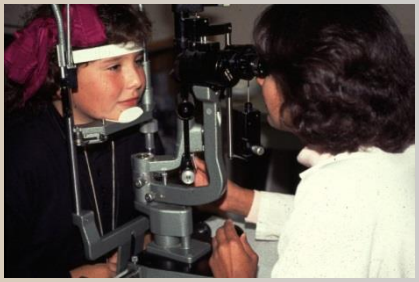
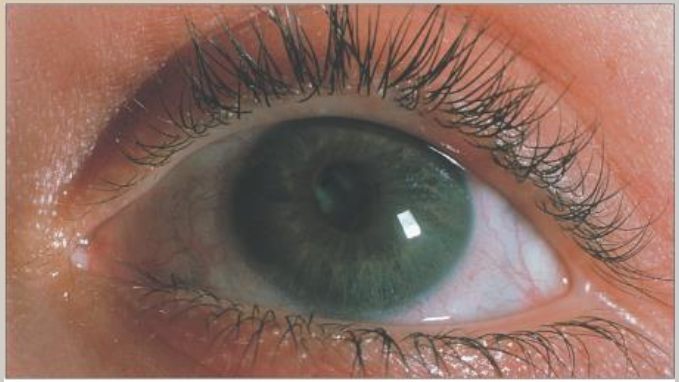
Eye Examinations for JIA

Slit lamp exam;

- Every 3-4 months x 4 yrs, then every 6 months x 3 yrs any JIA category except systemic JIA (sJIA) , ≤ 6 y.o. at onset, ANA +
- Every 6 months x 4 yrs then annually any categorey except sJIA, ≤ 6 y.o. at onset with ANA negative
- Every 6 months x 4 yrs, then annually if any category except sJIA with onset ≥ 7 y.o, ANA positive/negative
- Iritis –
  - Cataract and irregular pupil secondary to posterior synechiae





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Hochberg et al, Rheumatology, 3rd ed

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Laboratory and Diagnostic Evaluation for Juvenile Idiopathic Arthritis

Oligoarticular and Polyarticular Onset

- Antinuclear Antibody (ANA) (identify those at risk for iritis/uveitis)
- CRP (ESR may be normal in active disease)
- PPD
- Rheumatoid Factor (RF)
- HLA-B27 (for classification not diagnosis)
- Slit-lamp examination
- X-rays: not diagnostic, rule out other diagnoses
  can be diagnostic for sacroiliitis

Systemic Onset

- CXR
- ECG – look for signs of tamponade
- 2-D ECHO
- Slit-lamp examination
- Consider: Bone scan, Bone marrow bx, Small bowel series

What does a positive ANA mean?

- Screening test
- Detects antibodies against ~ 50 different components (proteins, DNA) of cell nucleus
- Low positive ANA common in normal persons
  - ~10% normal, healthy children have + ANA
  - Not due to disease process and NO clinical significance

Goals of Medical Treatment in JIA

- Amelioration of disease signs/symptoms
- Non-specific suppression of inflammatory response
- Minimize discomfort; Maximize function
- Maintain and/or improve strength and ROM
- Permit optimal physical and psychological growth and development
- Rationale for early, aggressive treatment based on improved outcomes in adult RA clinical trials
  - Decreased rate of erosions, remission less likely if treatment delayed

NSAIDs for Use in Children
*First line agents (*FDA approved)*

Drug	Dose Mg/kg/d	Dosage Form	Most common AEs
Aspirin	80-100 (4 divided doses)	Tablets	Abd. Pain, inc. transaminase, tinnitus, personality changes, N/V
Ibuprofen*	30-50 (4 divided doses)	Tablets, suspension	Abdominal pain
Naproxen*	10-20 (2 divided doses)	Tablets, suspension	Inc. transaminase, HA, N/V
Tomentin*	15-30 (4 divided doses)	Tablets, capsule	HA
Indomethacin	1-2 (2-4 divided doses)	Capsule, suspension	Abdominal pain, Sudden death??

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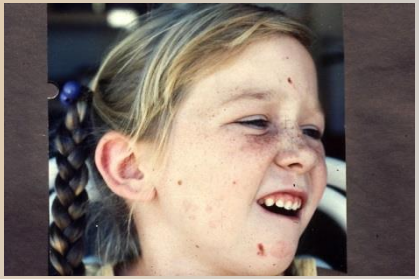
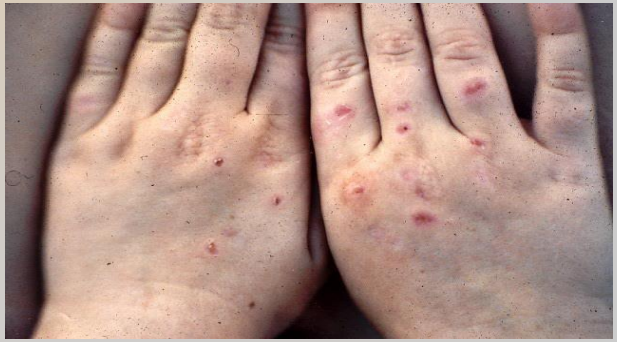
Pseudoporphyria

- Bullous disease of light exposed skin
- No abnormalities porphyrin metabolism
- Clinically: blistering, erosions, scarring, skin fragility
- Prevalence 10-12% in JIA patients on naproxen
- Risk factors – fair skin, blue/gray eyes





Schad et al Arthritis Research & Therapy 2007

Other NSAIDs

- Celecoxib FDA approved for use in pediatric patients
  - JIA, ages 2 yrs or older
  - $\geq$ 10 kg to < 25 kg give 50 mg cap BID
  - > 25 kg give 100 mg cap BID
- Meloxicam - Liquid preparation once/day dosing advantagous for kids intolerant of traditional NSAIDs, FDA approved for use in pediatric patients
  - Supplied as suspension, 7.5 mg/5mL
  - Oligo- or polyarticular JIA, ages 2 yrs or older
  - 0.125 mg/kg once daily up to 7.5 mg

Therapy: methotrexate

- Methotrexate (MTX)
  - 10-15mg/m^2/week or 0.5-1.0 mg/kg/wk
  - PO, SQ (not FDA approved), IM
  - Well tolerated; highly effective reducing symptoms and slowing radiographic progression JIA
  - Monitor CBC, platelets, differential, liver enzymes initially every 4 weeks then every 12 weeks if stable
  - Adverse events: oral ulcerations, alopecia, GI upset (most common at 13%), marrow suppression, hepatotoxicity, pulmonary toxicity

Therapy: sulfasalazine

- Sulfasalazine indicated for patient not responding to methotrexate or other therapies
  - 30-50 mg/kg/d
  - Adverse events: rash, bone marrow suppression, gi upset, hepatotoxicity, mood changes
  - Monitor CBC, LFTs q 6-8 weeks
  - May take 3 months to see response

Therapy: etanercept

- Etanercept (Enbrel) approved May 28, 1999 for moderately-severely active polyarticular JIA in patients with inadequate response to one or more disease modifying agents (DMARDs)
- 2-17 y.o.
- 0.4 mg/kg SQ two times/week (72-96 hours apart). Max dose 25 mg/dose
- Black box warning for pediatric malignancies
- AEs: redness at the injection site, URI, HA, rhinitis, vomiting. Infections generally mild, consistent with those seen in outpatient peds clinics

Therapy: adalimumab

- FDA approved February 26, 2008
- Indication: moderate to severe polyarticular JIA in patients 2 years of age or older
- Dose: 20 mg SQ every other week (EOW) for patients 15 kg to < 30 kg; 40 mg EOW for patients ≥ 30 kg
- Humira + MTX – 94% PACR 30; Humira alone 74% PACR 30
- Serious infections – 4% of patients within 2 years of tx with Humira (HSV, PNA, UTI, pharyngitis, herpes zoster)

Lovell, et al N Engl J Med 2008;359:810-820

Therapy: abatacept

- FDA approved April 8, 2008
- Indication: moderate to severe polyarticular JIA in patients 6 years or older
- IV Monotherapy or with MTX
- In clinical trial – patients who had inadequate response to DMARDs including MTX
  - 76% Peds ACR 30; 60% Peds ACR 50; 36% Peds ACR 70; 17% Peds ACR 90
  - Most common AEs – URI, nasophryngitis

Therapy: tocilizumab

- Humanized anti-IL-6 receptor antibody
  - Dysregulation of IL-6 plays major role development systemic clinical features
- FDA approved April 4, 2011 for active So-JIA (1st & only approved medication) ages 2 years and older (IV dosing q 4 weeks)
  - Tender study – 85% ACR 30 and absence of fever at Week 12
- FDA approved April 30, 2013 for active polyartricular JIA ages 2 years and older (IV dosing q 2 weeks)
  - CHERISH study – 91% of patients on tocilizumab/MTX and 83% tocilizumab with ACR 30 at week 16
- Most common AE – URI, HA, nasopharyngitis, diarrhea
- Lab abnormalities – neutropenia, elevated ALT and total cholesterol

Yokata et al The Adv Musculoskeletal Dis 2012

Therapy: canakinumab

- Fully human monoclonal antibody that inhibits interleukin 1 beta (IL-1)
- SQ once monthly injection
- FDA approved May 10, 2013 to treat active SoJIA in patients two years or older
- 84% of patients with SoJIA had ACR 30% following a single dose

Ruperto et al Arthritis & Rheumatism, Feb 2012

Risk of malignancy with use of TNFα blockers

- FDA received reports on 48 cases of malignancy in children associated with TNFα blockers as of April 28, 2008
- 31 cases for infliximab, 15 cases for etanercept, and 2 cases for adalimumab
- Types of malignancies
  - lymphoma, leukemia, melanoma, other solid tumors
- Patients had either JIA or Crohn's disease
- 88% of cases reported use of concomitant immunosuppressants
- Number and types of malignancies reported were concerning given small number of children treated with TNFα blockers

Rates of Malignancy Associated with JIA and Its Treatment

- Medicaid data 2000 through 2005 used to ID cohorts of children with JIA and without JIA
- 7,812 children with JIA – Standardized incidence ratio (SIR) 4.4 (95%CI) for probable and highly probable malignancies
- Following use of TNF inhibitors, no probable or highly probable malignancies identified (SIR 0 (95% CI)
- Increased risk of malignancy in JIA; treatment including TNF inhibitors, not significantly associated with development of malignancy

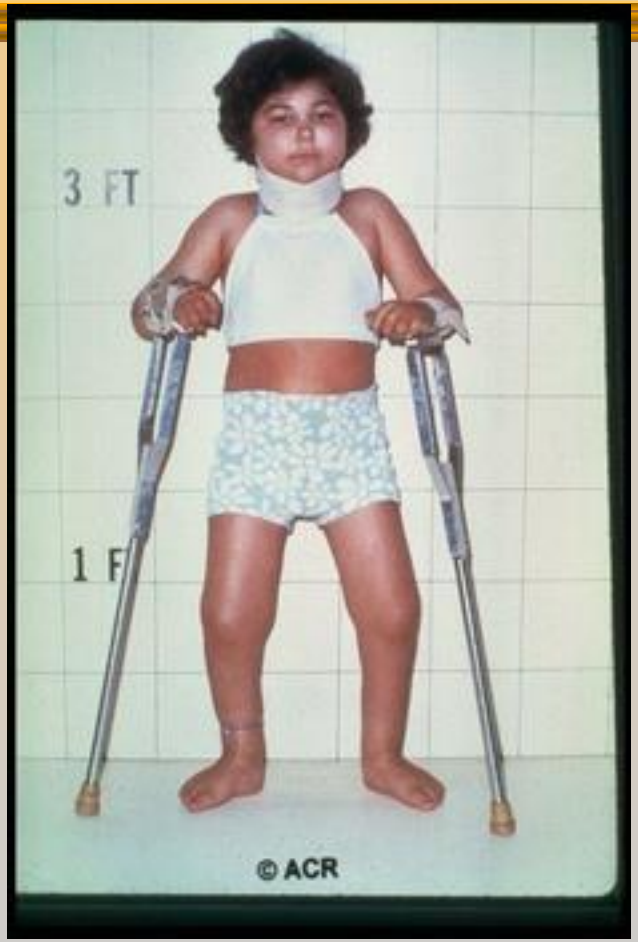
Beukelman et al, Arthritis & Rheumatism, April 2012

Therapy: Corticosteroids

- Corticosteroids not acceptable for long term use due to toxicities in children
  - Growth retardation most significant toxicity
  - Dose of 5 mg/d usually inhibitory
- 1-2 mg/kg/day in once daily dosing to treat systemic manifestations
- Methylprednisolone 10-30 mg/kg IV in one pulse, or daily for 3 days for severe JIA
- Triamcinolone hexacetonide (Aristospan) 5-40 mg (depending on joint size) for intra-articular injection

Growth Retardation in JRA

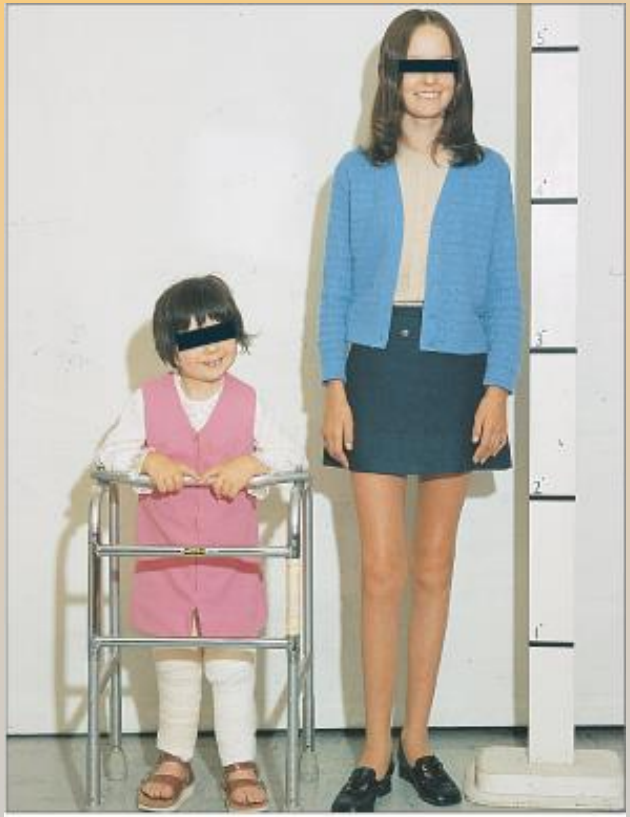
How old is this patient?



15 years old!

American College of Rheumatology slide deck

Growth Retardation at age 14



- Patient on left - systemic JIA at 1 y.o. and was treated with daily divided corticosteroids.
- On the right, patient with systemic JIA but onset not until the age of 7 years. Treatment - NSAIDs and short courses of alternate-day corticosteroids and is on the normal percentile for her age.

Hochberg et al, Rheumatology, 3rd ed

Prognosis

- Recent outcomes studies show patients JIA often have lifelong sequelae
  - Patients followed 27 years, 53% active with avg. age at diagnosis 7.5 years
- Initially believed that 70-90% of patients enter adulthood without significant disability but now believed 50-70% of poly- or systemic arthritis and 40-50% of oligoarthritis will have active disease in adulthood
- At greatest risk for joint destruction:
  - Those with systemic onset disease
  - Those with RF+ polyarthritis
- Iritis/uveitis may cause permanent disability (5-16% visual defects, 16-26% cataracts, 14-24% glaucoma, 11-22% band keratopathy)

Juvenile Systemic Lupus Erythematosus

- Most common connective tissue disease in childhood
  - Prevalence: 5-10 per 100,000
    - Adolescent females but may affect males and younger kids
- ANA positive in virtually ALL children with SLE
  - Presence of anti-Smith Ab and hypocomplementemia
  - Renal involvement common – up to 2/3 of children with SLE
  - CNS involvement common cause of morbidity
    - Transverse myelitis, seizures, coma or subtle findings (poor judgement, depression, short term memory deficits)
- ACR criteria for SLE applies to SLE in children
- May initially present with ITP and then meet criteria months or years later

Criteria for SLE Diagnosis

1. Malar rash
2. Discoid rash
3. Photosensitivity
4. Oral ulcers – or nasopharyngeal ulcers
5. Arthritis – 2 or more peripheral joints
6. Serositis – pleuritis, pericarditis
7. Renal disorder – proteinuria or cellular casts
8. Neurologic disorder – seizure, psychosis
9. Hematologic disorder –hemolytic anemia, leukopenia or lymphopenia
10. Immunologic disorder – dsDNA, anti-Smith Ab, aCL Abs, LAC, or false + VDRL
11. Antinuclear antibody

Pediatric Rheumatology

- February 2007 report to the Health Resources and Services Adminstraion (HRSA_
  - The Pediatric Rheumatology Workforce: A Study of the Supply and Demand for Pediatric Rheumatologists
- As of 2003, less than 200 board certified practicing Pediatric Rheumatologists
- As of 2003, 13 states in the United States did not have a single Pediatric Rheumatologist
- 300,000 children felt to have pediatric rheumatic disease in the United States
- On average, patients travel 57 miles to see Peds Rheum, but less than 25 miles to see Peds Cards, Peds Endo and other specialties
- One-third of medical schools and 40 percent of pediatric residency programs have no pediatric rheumatologist available to provide patient care or educate physicians in training
- In 2003, only 10 fellows in Pediatric Rheumatology completed their training

Choosing Wisely®

Five Things Physicians and Patients Should Question

- Don’t order antibody panels unless positive antinuclear antibodies (ANA) and evidence of rheumatic disease
  - Up to 50% of children develop MS pain but no evidence Ab testing w/o HX or PE of rheum disease enhances DX w/ isolated MS pain
  - Ab panels expensive
  - Evidence demonstrates cost reduction by limiting autoAb panel testing

Choosing Wisely®

Five Things Physicians and Patients Should Question

- Don’t test for Lyme disease as cause of MS symptoms w/o exposure history & appropriate exam findings
  - Lyme Dz – brief attacks of arthralgia or intermittent or persistent episodes of arthritis in one or a few large joints at a time, esp knee
  - Diffuse arthralgias, myalgias or fibromyalgia alone are not criteria for MS Lyme disease

Choosing Wisely®

Five Things Physicians and Patients Should Question

- Don’t routinely perform surveillance joint x-rays to monitor JIA disease activity
  - No available data to suggest routine x-rays improves outcomes
  - Radiation exposure and costs are potential risks
  - Obtain x-rays only when HX/PE raise clinical concern about joint damage or decline in function

Choosing Wisely®

Five Things Physicians and Patients Should Question

- Don’t perform methotrexate toxicity labs more often than every 12 weeks on stable doses
- Lab abnormalities usually mild, rarely prompt significant changes in treatment
- More frequent monitoring 1st six months of treatment, dose escalation or risk factors for toxicity
  - Obesity, diabetes, renal disease, psoriasis, SO-JIA, Down syndrome or use of alcohol

Choosing Wisely®

Five Things Physicians and Patients Should Question

- Don’t repeat a confirmed positive ANA in patients with established JIA or systemic lupus erythematosus (SLE)
  - ANA important in DX SLE and positivity guides more frequent slit lamp exams for detection of uveitis in children with JIA
  - No evidenced that ANA is valuable for ongoing management of SLE or JIA
  - Repeat if child with JIA has evolution of sxs suggestive of an autoimmune connective tissue disease

References

- Textbook of Pediatric Rheumatology, 5th edition, Cassidy, JT, Petty et al, 2005
- Rheumatology, 3rd edition, Hochberg MC, Silman, AJ et al, 2003
- Rheumatology, 2nd edition, Kippel JH, Dieppe, PA, 1998