Evaluating Children With Musculoskeletal Complaints: An Evidence-Based Approach

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Disclosure
Nobody pays me any money for saying what I’m about to say.

Case Presentation
A three year old girl was seen by her pediatrician for swelling of her left knee of ten days’ duration.
She had been well until 2 weeks earlier, when she fell off her backyard swing. She fell onto her hands and knees and cried immediately. She seemed to be well until 5 days later, when her mother noticed that she was limping. Two days after the limping started, the child’s mother noticed that the child’s left knee was swollen. She consulted her primary care physician.

Case Presentation (2)
The child was noted to be afebrile. She walked with her left knee slightly flexed. She had swelling of her left knee, and was mildly fretful when the examiner tried to fully extend the knee. She was referred to an orthopedic surgeon.
The orthopedic surgeon examined the child, and obtained plain films of her affected knee. These showed only a small effusion. She was placed in a cast for 2 weeks.
Case Presentation 2

A thirteen year old girl was referred to the rheumatologist for evaluation of knee pain of two years’ duration.

The pain usually occurred in the late afternoon and was invariably made worse with activity, better with rest. Her primary care physician examined her and found no evidence of joint swelling. However, an “arthritis panel” was sent, and the following laboratory values were found:

- IgM rheumatoid factor – Not detected
- Antinuclear antibodies - + 1:80

At the rheumatologist: The child consistently denied limping, constitutional symptoms (fatigue, malaise, morning stiffness, unexplained fever). Her mother reports that there may occasionally be swelling of the knees for an hour or so when they hurt.

Exam – Increased external rotation of both shoulders, increased extension and flexion of both wrists, increased internal and external rotation of both hips. Both knees demonstrate moderate laxity of the anterior and posterior cruciate ligaments as well as the medial collateral ligament.

Diagnosis – Physiologic hypermobility syndrome
How Often is Pain the Presenting Complaint of Children With Rheumatic Disease?


Julie McGhee – Native American Center of Excellence summer student (currently OU Med. Class of 2005)
Frank Burks, Class of 2004 – OU Summer Honors Research Program and American College of Rheumatology Summer Research Fellow
Julie Sheckles – NW OK State University, Weatherford

Complaints for Which Children Were Referred

Predictive Value of Pain for Rheumatic Disease in Children

<table>
<thead>
<tr>
<th>Total</th>
<th>JRA</th>
<th>JRA or Other Rheumatic Disease</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Pain as an isolated complaint</td>
<td>111</td>
<td>0 (NPV* = 1.0)</td>
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<tr>
<td>Pain as one of several reasons for referral</td>
<td>217</td>
<td>11 (NPV = 0.94)</td>
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* NPV = Negative predictive value

Diagnoses Associated With Isolated Musculoskeletal Pain In Children

- Hypermobility syndrome
- Osgood-Schlatter’s disease
- Patello-femoral pain syndromes
- Psychogenic pain syndromes

Most Common Complaint of Children Presenting With JRA: Joint Swelling

P < 0.0001; PPV = 0.51

Duration of Symptoms: Another Useful Clinical Clue

* P = < 0.0001 compared with non-JRA diagnoses
Diagnosing JRA: How Useful is the Laboratory?

<table>
<thead>
<tr>
<th>Test cited as reason for referral</th>
<th>Number Referred</th>
<th>JRA</th>
<th>Other</th>
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<tbody>
<tr>
<td>IgM-RF</td>
<td>16</td>
<td>3 (19%)*</td>
<td>13 (81%)</td>
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<tr>
<td>ANA</td>
<td>90</td>
<td>14 (16%)</td>
<td>76 (84%)</td>
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<tr>
<td>ESR</td>
<td>47</td>
<td>18 (38%)</td>
<td>29 (62%)</td>
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* All three cases presented with prominent joint swelling and morning stiffness.

Rheumatoid Factor Testing: Things to Consider

1. Most children with JRA don’t have a positive test.
2. Most children with a positive test don’t have JRA.
3. Why order the test???

ANA Tests: A Great Way to Spend Money and Worry Your Patients

<table>
<thead>
<tr>
<th>Reciprocal Dilution</th>
<th>SLE</th>
<th>JRA</th>
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Diagnosing JRA: Making the Laboratory Useful

1. Commercially-available "arthritis panels" have no clinical utility in pediatrics.
2. IgM-RF tests have no diagnostic utility and should never be ordered as a "screening" for children presenting with musculoskeletal complaints. Pediatric rheumatologists use this test for prognosis.
3. Use ANA tests to screen for SLE, not JRA. ANA tests in JRA are used to identify children at high risk for uveitis.
4. Erythrocyte sedimentation rates may be useful, but must be placed in the appropriate clinical context.

The Physical Exam: Detecting Synovitis

A Normal Diarthrodial Joint
Proliferative Synovium

Another Helpful Clue: Know the Phenotypes

JRA Subtype Distribution: Native American vs. Caucasian

<table>
<thead>
<tr>
<th>Percent</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
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<tr>
<td>Pauciarticular JRA</td>
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Some Other Thoughts:

1. Acute lymphocytic leukemia – May present with very prominent musculoskeletal pain and even joint swelling. Refusal to walk may be a "red flag." Serum LDH often elevated.

2. Epstein-Barr virus infection – Can also present with prominent musculoskeletal symptoms. Fever may be intermittent (doesn’t occur every day) but lasts all day when it’s present. Systemic JRA presents with DAILY fever, and the fever usually occurs at predictable times during the day.

3. Sleep disturbance with or without depression – Can also present with diffuse musculoskeletal pain.

Thank You!!!!
Also thanks to……

Thanks also to:
Dr. Terry Stull – Chair, Dept. of Pediatrics,
University of Oklahoma College of Medicine