Joint pain and swelling are common manifestations of many musculoskeletal and rheumatologic diseases. As a result, the differential diagnosis of childhood joint pain and swelling is large and includes both benign and serious conditions.
The assessment of a child with joint pain and/or swelling needs to differentiate between conditions of varying severity, especially those that require urgent medical intervention”

Yukiko and Southwood
(http://www.uptodate.com)

Presentations

JIA presents in with joint pain and...
- One swollen joint
- A few swollen joints
- A fever and joint pain
- Stiffness and very subtle swelling
- Failure to use a limb (limping, difficulty writing...)
- With uveitis and joint pain
On history it is important to ask:
- Family history: of arthritis, Crohn’s, UC, lupus, psoriasis
- Morning stiffness
- Difficulty on stairs
- As well as the duration

Examine all the joints: PGALS
List 2 When inflammatory joint disease is suspected

- The lack of reported pain does not exclude arthritis
- There is need to probe for symptoms such as
  - gelling (e.g. stiffness after long car rides)
  - altered function (e.g. play, handwriting skills, writing, regression of milestones)
  - deterioration in behaviour (irritability, poor sleeping)
- There is need to examine all joints as often joint involvement may be ‘asymptomatic’
Other differentials

- Reactive arthritis?
- Other connective tissue
- Other diseases:
  - Septic arthritis
  - Leukaemia
  - Haemophilia
  - Hypermobility

Differential diagnosis: single swollen joint

- Oligoarthritis
- Psoriatic arthritis
- Tuberculosis
- Haemangioma
- Sarcoidosis
- Haemophilia
- Discoid meniscus
- Villonodular synovitis
List 3 RED FLAGS (to raise concern about infection, or malignancy or non-accidental injury)

- Fever, systemic upset (malaise, weight loss, night sweats)
- Lymphadenopathy, hepatosplenomegaly
- Bone pain
- Persistent night waking
- Incongruence between history and presentation/pattern of physical findings

Using the lab

- Basic investigations:
  - FBC, ESR, CRP, Uric Acid, LDH
- Use your clinical investigation to guide you further:
  - TFT, immunoglobulins, muscle enzymes, liver/kidney testing,
- Special tests: ANA, HLAB27, RF
“Since the introduction of the ANA by IF in 1957, it seems to have become a reflex reaction to the question: ‘Could this child have an auto-immune disease?’

But the ANA has low specificity and sensitivity for most auto-immune diseases in childhood.

It should not be used as a screening tool.
When to use ANA

- To address specific questions:
  - Does this child with a fever and arthritis have SLE?
  - If the ANA is negative, it is less likely
  - Useful in JIA: to predict the occurrence of uveitis.
  - Raynaud’s disease to track possible progression

- Up to 40% of all children’s sera at a large teaching hospital will be ANA positive, and very few have a rheumatic disease.

Rheumatoid factor (and CCP)

- Poor screening test
- Studies vary, 2-10% of children with established JIA are RF positive
- Can be positive in other diseases: MCTD

- Worst thing you could do is to tell a child and parents that this is not arthritis based on a negative RF

- CCP: very specific, poor sensitivity
RF as a diagnostic test

<table>
<thead>
<tr>
<th>Juvenile arthritis</th>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF +</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>RF -</td>
<td>100</td>
<td>326</td>
</tr>
</tbody>
</table>

Specificity: 5/105 = 4.8%
Sensitivity: 326/332 = 98%
Positive Predictive Value: 5/11 = 45.4%
Negative Predictive Value: 326/426 = 76.5%
False positive rate: 6/11 = 54.5%
False negative rate: 100/426 = 23.5%

Eichenfield et al. Paediatrics 74;480,1986

HLAB27 marker

- Useful if present
- May predict the course of disease
- More children respond to Sulfasalazine
- Helpful for families
Ultrasound as a diagnostic tool

- Increasingly powerful tool
- Is dependent on expertise
- Can detect sub-clinical synovitis
- Very good monitoring tool


Using MRI/bone scans

- MRI gold standard
- Diagnosis, extent of synovitis, myositis
- Excellent for monitoring of complication (erosion, damage)
- Rule out osteonecrosis (AVN)
- Bone scan are good for spinal/widespread disease, but insensitive
Should you biopsy?

- Only if the diagnosis is in doubt:
- Tumour
- Foreign body
- Rare disease? (sarcoidosis)
- If you strongly suspect TB
Treating JIA:

- Elimination of pain and inflammation.
- The normalization of short and long term function
- The achievement of normal growth, physical and psychosocial development


Current guidelines
Therapy

- Drugs
  - NSAIDS
  - MTX
  - Salazopyrin
  - Chloroquine
  - Arava
  - Other: low dose prednisone, azathioprine
  - Biologicals
- Physio, OT, Podiatry, Ophthalmology, biokinetics, hydrotherapy, pain therapy

Safety concerns: monitoring

- Most patients experience at least one side effect, mostly mild:
- URTI, headache, nausea, injection site reactions, abdominal pain and diarrhoea
- Serious infections are rarely reported
- BE vigilant: treat infections quickly
- No live vaccines
- Think about TB
- Be aware that varicella is dangerous
Other monitoring

- Keep non-live vaccines up to date
- Remind them about Ophthalmology visits
- Watch the growth, keep them active
- Families need support: psychology

Conclusion
Thank-you