Blood tests in Rheumatology
The why when and what to do next!
Introduction

• Think of some blood tests used in rheumatology
• Blood count/biochemistry
• ESR/C-reactive protein
• Autoantibodies!
  • antinuclear
  • rheumatoid factor
  • extractable nuclear
Routine tests

• Blood count
  • anaemia
  • raised/low white count
  • raised platelets
  • low platelets

• Biochemistry
  • renal impairment
  • calcium abnormalities
  • raised alkaline phosphatase
  • uric acid
Uric Acid

• Levels raised in
  • drugs eg diuretics
  • increased cell turnover eg lymphoma
  • renal failure

• Raised levels associated with
  • hypertension
  • Hyperlipidaemia
Raised urate and no symptoms = gout?

• Not necessarily!
• Look for risk factors
  • diet/drugs
• Not necessary to treat unless worried re: uric acid stones
How to treat

• **Acute attack**
  • NSAID
  • ? colchicine
  • IM depomedrone for polyarticular disease
  • Intra-articular steroid
  • Diet advice etc

• **Recurrent attacks**
  • Add allopurinol
Do I have to get proof with crystals?

- No
- If history and examination classic then treat
- Need fluid if worries about sepsis or polyarticular joint involvement
- Realistically can only get fluid from knee
Inflammatory markers

• ESR
• Plasma Viscosity
• C-reactive protein
Why do we order them?

- “Sickness index”
- Diagnosis
- Monitoring of disease activity
ESR: Normal ranges

- **Adults <50** range (mm/hr)
  - Male 0-15
  - Female 0-20

- **Adults > 50**
  - Male 0-20
  - Female 0-30
Causes of a raised ESR

- Old age
- Female
- Pregnancy
- Anemia
- Red blood cell abnormalities
- Macrocytosis
- Technical factors
  - Dilutional problem
  - Increased temperature of specimen
  - Tilted ESR tube
- Elevated fibrinogen level
  - Infection
  - Renal Failure
  - Inflammation
  - Diabetes mellitus
  - Malignancy
Advantages and Disadvantages of ESR, CRP and PV

<table>
<thead>
<tr>
<th>Test</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>ESR</td>
<td>Cheap, Quick</td>
<td>Non specific, Affected by many factors</td>
</tr>
<tr>
<td>CRP</td>
<td>Rapid response to inflammation</td>
<td>Expensive</td>
</tr>
<tr>
<td>PV</td>
<td>Not affected by haematocrit or red cell size</td>
<td>Expensive, Not widely available, technically more difficult</td>
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Using the ESR

• “Sickness Index”
• Diagnosis
  • Polymyalgia rheumatica/temporal arteritis
  • Low false positive rate if ESR > 100mm/hr
  – Inflammatory disease
  – Malignancy
  – Infection
• Monitoring
  • Response to therapy
How to manage a raised ESR

- Recheck
- Follow up significant symptoms or signs
- Infection
  - Urinalysis
  - CXR
- Malignancy
  - CXR
  - Protein electrophoresis
- Autoantibodies if appropriate
Conclusion

Acute phase markers non-specific

Use in conjunction with symptoms and signs.

Normal ESR/CRP does not rule out disease
Autoantibodies

- Who needs an autoantibody screen?
- Those with suspicious symptoms or signs!
- Can cause more trouble than they are worth!
- Can be positive in healthy people
Rheumatoid factor (RhF)

- 80% of patients with RA
- Also positive in lupus, Sjogren’s syndrome
- A result of 1/40 is not significant
- 1/80 and more may be significant but ONLY in conjunction with history and examination
Antinuclear antibodies (ANA)

- Positive in nearly all lupus patients
- Also in RA, sjogren’s and myositis
- Less than 1/100 prob not significant
- Again, only do if there are suspicious symptoms and signs
What tests?

- Simple back pain
- Sciatica
- Red flag back pain
- Fibromyalgia
- Osteoarthritis
- Hot swollen joint
- Hot swollen multiple joints
- Dry eyes/mouth/fatigue/raynauds
• Simple back pain/ sciatica/osteoarthritis
  • no blood tests

• Red flag back pain
  • ESR
  • blood count
  • biochemistry

• Fibromyalgia
  • Theory - no tests
  • reality - all these tests discussed!

• Hot swollen joint
  • ESR / blood count / urate
  • Rh factor?
• multiple hot joints
  • ESR/blood count/biochemistry
  • Rh factor

• symptoms of connective tissue disease
  • Above plus ANA
Case history 1

• 67 year old woman
• 7-day history severe headache
• unilateral, pain on brushing hair
• blurred vision
• Diagnosis: Temporal arteritis
• Tests: blood count/ESR/CRP
• Treatment: Hi dose prednisolone 60mg ASAP
Case History 2

- 28 year old woman
- 10 years of joint pain knees and hands
- worse when typing
- nothing to find on examination
- possible carpal tunnel syndrome
- tests: none
Case history 3

- 67 year old man
- worsening back and hip pain
- night pain
- weight loss
- tests: blood count/biochem/ESR/myeloma screen/PSA
Case History 4

ANA/blood count/ESR