

Multiple Myeloma

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Presenting complaint

- 73yo Female
- Confused
- Falls at home
- Back pain
- Generally unwell for 1-2 months

Investigations

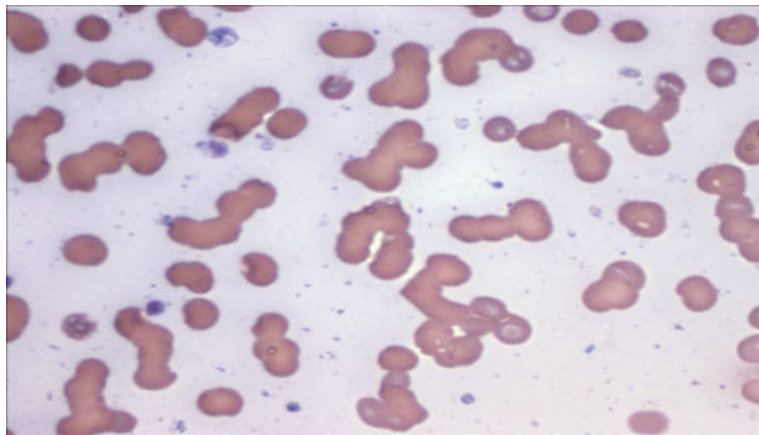
- Full Blood Count
 - Hb 90
 - WBC 8.6
 - Platelets 168
- Blood Film
 - Marked Rouleaux
- Renal function ↑creatinine 250mmol/l
- Liver function Normal
- Calcium 3.2mmol/l

Rouleaux

- The most usual cause of an increased ESR is the formation of **rouleaux** of red blood corpuscles. These rouleaux are like stacks of coins and they fall more quickly through the plasma than do the corpuscles that make them up.

- Rouleaux formation does not take place to any great extent in normal blood except at low temperature or velocity of flow. It is generally the result of a change in the surface properties of the red corpuscles, which then tend to stick together.

Rouleaux



- This change is brought about by an increased concentration of **plasma proteins**, the most important of which is **fibrinogen**, and some **immunoglobulins**. Increased ESR is therefore a measure of the acute phase response to a challenge that may be immunological, infective, ischaemic, traumatic or malignant.

- Normally red cells don't settle far toward the bottom of the tube in an ESR test. Rouleaux, because they are grouped, are heavier and fall faster. The faster they fall, the further they settle, and the higher the ESR.
- Rouleaux are therefore a **visual analogue of a high ESR**.

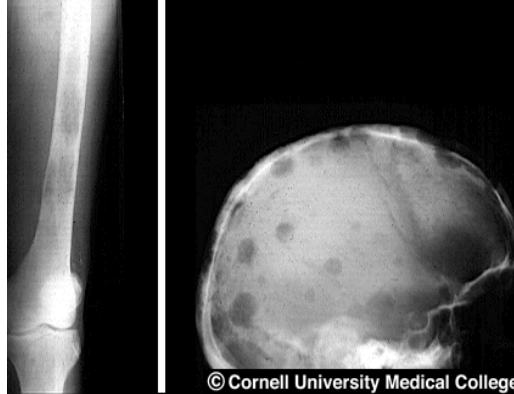
- ESR is increased in **rheumatoid diseases**, most **infections**, **connective tissue diseases** and **cancer**. An advanced rate doesn't diagnose a specific disease, but it does indicate that an underlying disease may be present.

Differential Diagnosis

- Multiple Myeloma
- Renal failure
- Malignancy
- Anaemia
- Hyperparathyroidism
- Dementia
- Osteoarthritis

Multiple Myeloma

- Bone Disease
 - Back pain
 - Pathological fractures
 - Lytic lesions
- Anaemia
- Thrombocytopenia
- Renal Failure
- Generally unwell
- Confusion
- Infections



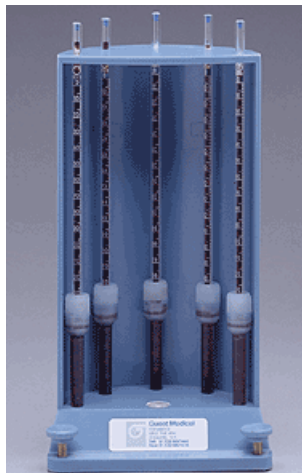
Renal Failure

- Anaemia
- ↑creatinine
- 2° hypercalcaemia
- Generally unwell

Combination of Factors

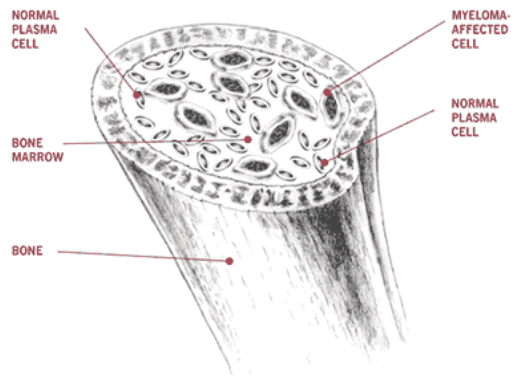
- Anaemia
 - Chronic disease
 - Iron deficiency
- Hyperparathyroidism
- Dementia
- Osteoarthritis
- Malignancy

ESR



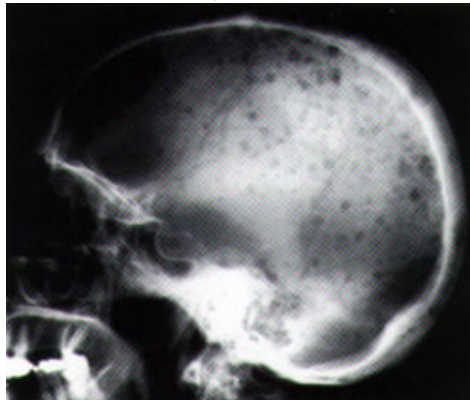
Bone Marrow Aspirate

- Characteristic infiltration by plasma cells



Skeletal Survey

- Characteristic osteolytic lesions (often in skull)



Further Tests

- Serum Protein electrophoresis
 - Monoclonal bands
- 24 Hour Urine Sample
 - Bence Jones Proteins (excess light chains)

Clinical symptoms of hypercalcaemia

- Asymptomatic?
- General
- Renal
- Bones
- Ectopic calcification
- Underlying cause

Management of acute hypercalcaemia

- Hydration - SALINE
- IV bisphosphonates – PAMIDRONATE
- (calcitonin)
- PREDNISOLONE (30-60mg) –specific cause
- Oral phosphate
- + underlying cause