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#MADEEASY

MULTIPLE MYELOMA

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What is MULTIPLE MYELOMA

Multiple myeloma is a multifocal malignancy of plasma cells (myeloma cells).

Pathogenesis

- ***There is clonal proliferation of abnormal plasma cells/myeloma cells in the bone marrow.***
- ***This means as if xerox copies are created for plasma cells.***
- ***This creates monoclonal immunoglobulins, free light chains--> M protein.***
- ***Causes end-organ damage***
- ***Myeloma cells infiltrate the bone marrow, replacing normal haematopoietic cells.***
- ***Results in decreased haematopoiesis pancytopenia***
- ***Myeloma cells secrete cytokines: interleukin 6 & TNF alpha***
- ***Activate osteoclasts, causing bone resorption --> hypercalcemia***
- ***Plasma cells show***

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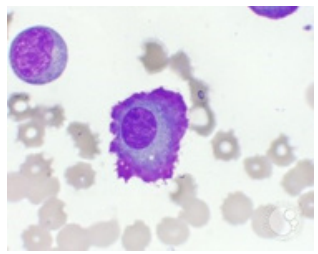
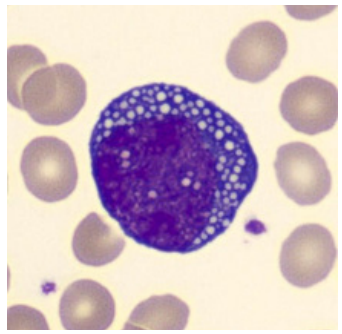
Pathogenesis

Flame cell



Mott cell: cell with many bubbles



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Pathogenesis

Russel body: ***one single bubble is one single russel body***

- ***First copies of abnormal cells are produced, then these copies synthesise excess amount of abnormal products that cause organ damage. These abnormal cells replace normal cells and hamper their function. The abnormal cells also produce extra bad substances causing calcium increase.***

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Clinical Presentation

Can be remembered by the famous mnemonic CRAB

C: Calcium & 11 mg/dl (hypercalcemia)
ytokines activate osteoclast --> cause bone breakdown --> calcium released in blood

Hypercalcemia

- ***Thirst, constipation***
- ***Normal levels: 9-11 mg/dl***

R: Renal disturbances

- ***Renal failure: Free light chains get deposited and cause damage***
- ***Hypercalcemia also leads to damage to nephrotic tissue.***
- ***Bence-Jones protein is excreted with urine, acts as a marker.***

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Clinical Presentation

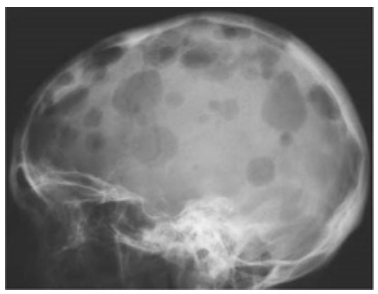
A: Anemia

- ***Normal bone marrow cells are replaced by myeloma cells--> pancytopenia***
- ***Neutropenia, anemia and thrombocytopenia seen.***
- ***Recurrent infections and fever***
- ***Fatigue, pallor***
- ***Increased bleeding tendency***

B: Bony lesions

Osteolytic bony lesions caused by osteoclast activation.
Results in pathological fractures

- ***Spinal vertebrae: backache, may lead to cord compression à parasthesia***
- ***Skull: punched out lesions, headache***



- ***Pelvic bones***

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Complications

- ***Renal amyloidosis***

Light chains can get accumulate as AL amyloid in various organs.

- ***infections***

MCC of death in Multiple Myeloma

- ***Hyper viscosity syndrome***

Increased viscosity due to presence of light chains