#The last 10 slides of lecture 2 ,not included in sheet 3

**MYELOID LINAGES OF INNATE SYSTEM**

* **Agranular leukocytes** : 1)monocyte in blood

2) macrophage in tissues

3) dendritic cells : branchlike cytoplasmic processes ,maybe sometimes of lymphoid origin but mainly myeloid .

 **DENDRITIC CELLS :**

 dendritic cells functions : AG presentation , cytokines production ( these 2 functions the main function ) , phagocytosis

(more important in AG presentation and cytokines secretion than microbial killing )

A special type of dendritic cells called **plasmacytoid dendritic cells** which perform special action against viruses .

Dendritic cells play important role in adaptive immunity … APC for T lymphocyte

MONOCYTES :

* Short half life in blood (1-2 days)
* Settle تستقر in tissues for months as macrophages
* The main function is phagocytosis which is followed by microbial killing which done by enzymetic degradation and bactericidal activites

GRANULOCYTE : neutrophils , basophiles and mast cells , eosinophiles

NEUTROPHILES :

* the most numerous of leukocytes
* 60% of peripheral blood WBCs
* Called PMN ,polymorphonuclear cells due to their lobes (2-5 lobes)
* half life : 7 hours
* their production increased in acute inflammation
* when exhausted ( ( عندما يستهلكوا اكتر في العملية الالتهابية immature cells will increase in peripheral blood \*band cells\* and this called **shift to the left**
* 2 types of granules which perform enzymetic and bactericidal activities : SPECIFIC AND AZUROPHILIC granules

**Specific granules** : enzymes like lysozyme and collagenases …ect

**Azurophilic granules** : enzymes and microbicidal substances (defensins and cathelcidins)

Enzymes that present in azurophilic granules : acid hydrolases which act mainly in acidic environment , neutral enzymes like elastases and cathepsin G , lysozyme , **myeloperoxidase which produce hypochlorate from free radicals .**

**Cl +h2o2 converted into hocl or ocl by MPO .**

**Lyzosyme present in specific and azurophilic granules .**

**BASOPHILES AND MAST CELLS**

* Their granules contain amines … basophilic , like histamine (vasoactive amines ) which produces vasodilation and bronchoconstriction ( smooth muscle contraction )
* Tissue resident form : masts cells which perform degranulation reaction
* Basophils and mast cells have role in allergic reaction

EOSINOPHILS

Special function against helminthes

Have roles in allergeic reactions

**Lymphoid lineage of innate system :**

* **NK cells ( non phagocytic lymphoid derived cells ) have roles in innate system and perform special function against viruses and intracellular bacteria**
* **Intraepithelial lymphocytes ; lymphocyte like cell and its action not specific like b and T lymphocyte , spectial type of T and b-1 subsets of lymphocytes but acts in innate system …discussed later .**