

WBC's DISORDERS

Dr .athmar MR



LEUKOCYTOSIS

- Leukocytosis is a white blood cell count above the normal range in the peripheral blood.
> 11000/cmm



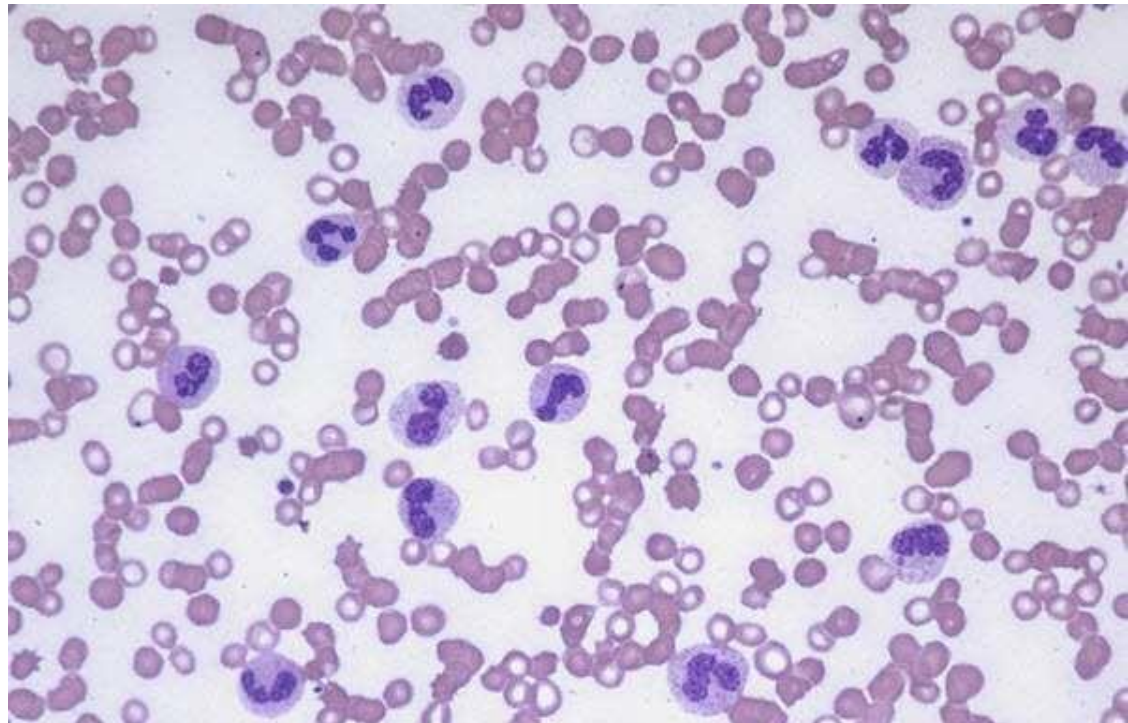
TYPES OF LEUKOCYTOSIS

- There are five types of leukocytosis
 - Neutrophilia
 - Eosinophilia
 - Basophilia
 - Manocytosis
 - lymphocytosis



NEUTROPHILIA

- Neutrophilia (or neutrophil leukocytosis) describes a high number of neutrophil granulocytes.
- Increase in the number of neutrophils and/or its precursors
/7,000<cmm



CAUSES

- Bacterial infection
- Some viral infections
 - Chickenpox
 - Herpes
 - simplex
- Acute inflammations
- Myocardial Infarction
- Burns
- Some drugs
 - Epiniprine
 - Cartisole
 - Predinisione



CAUSES

- Malignancy
- Chronic myelogenous leukemia
- Appendicitis
- Splenectomy
- Some parasitic infections
 - Hepatic amoebiasis
 - Pneumocystis carinii

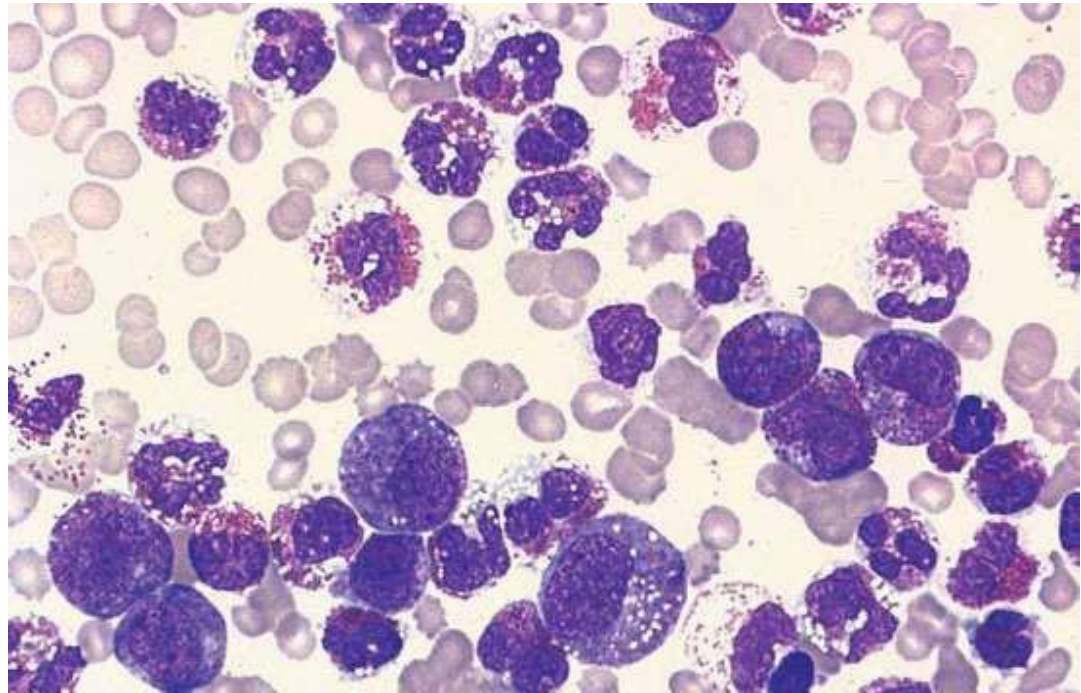


CLINICAL MANIFESTATION



EOSINOPHELIA

- Eosinophilia is a condition in which the eosinophil count in the peripheral blood exceeds, mean $> 400/\text{cmm}$



CAUSES

- Allergy
- Tumors
- Infections
- Malignancy
- Skin disorder
- GIT disorders
- Hypereosinophilic syndrome
- Parasitic and fungal diseases
- Endocrine disorders
- Autoimmune diseases

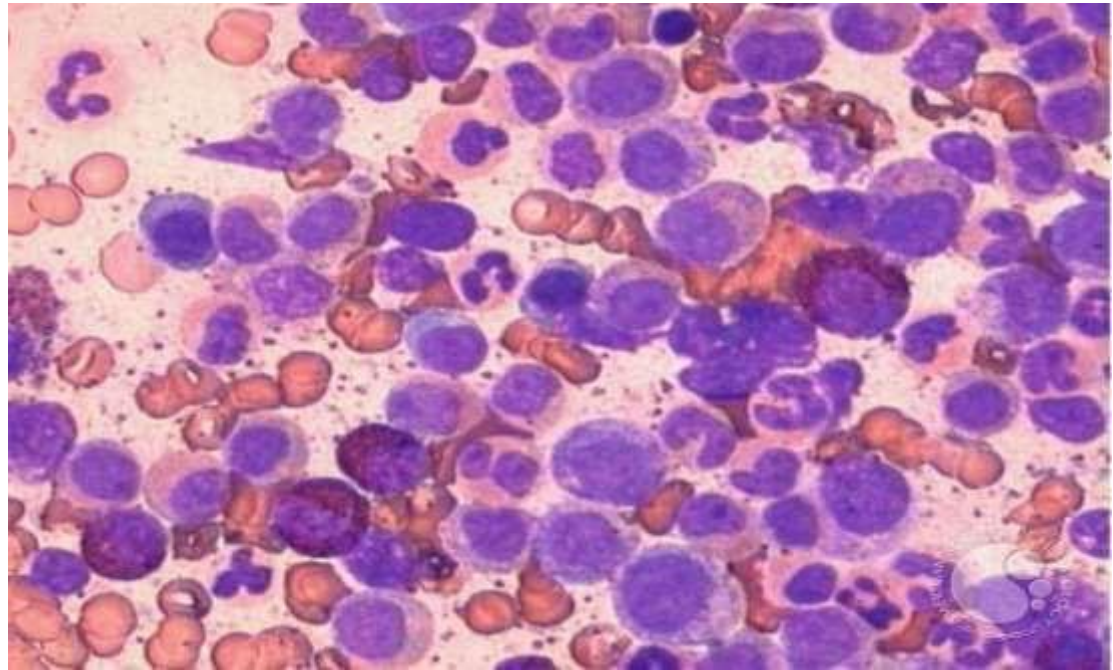


CLINICAL MANIFESTATION



BASOPHILIA

- Basophilia is a condition where the basophil quantity is abnormally elevated $> 100/\text{cmm}$ in peripheral blood.

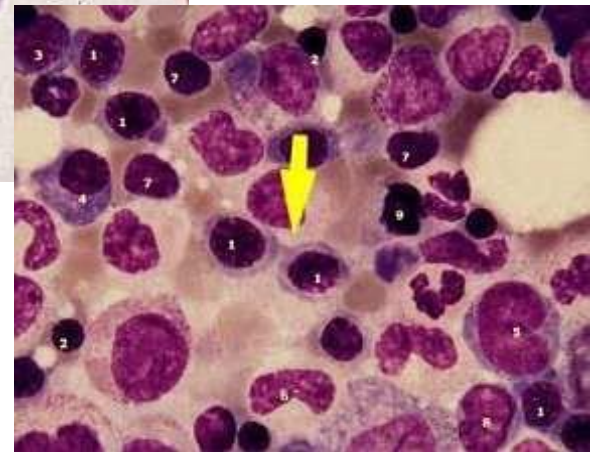
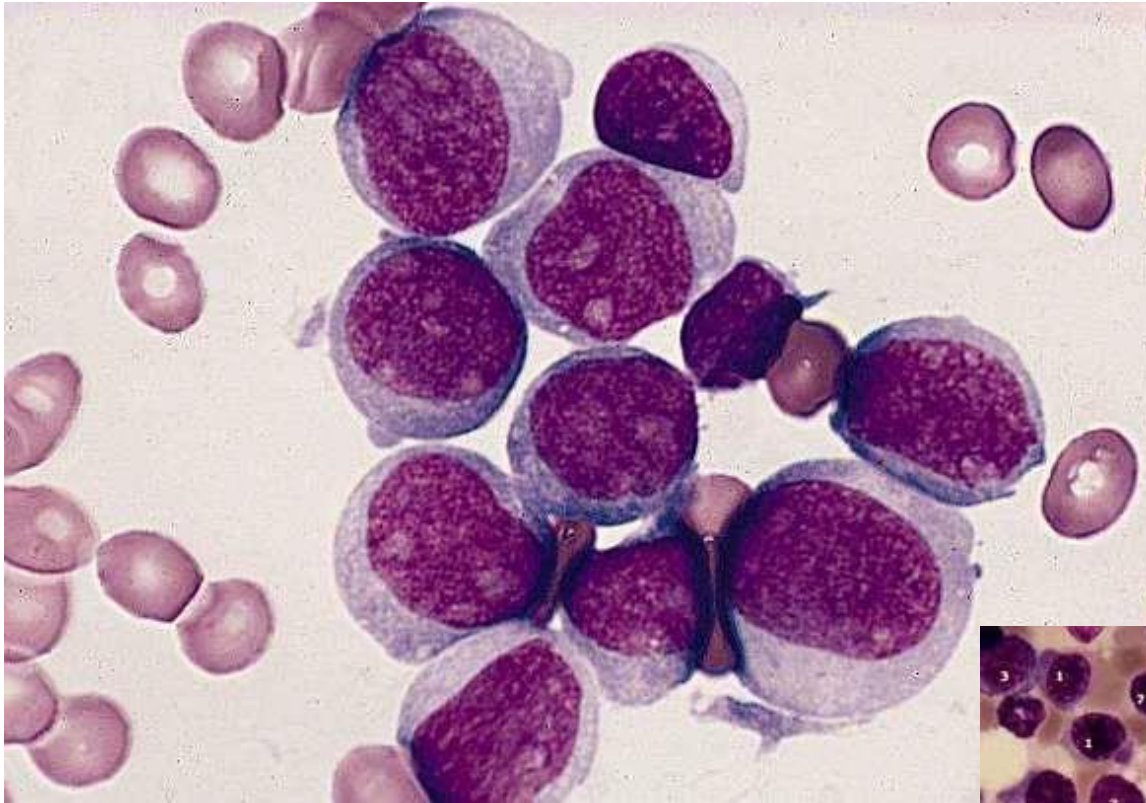


CAUSES

- Myeloproliferative Neoplasms (MPN)
- Carcinoma
- Lymphoma
- Allergy
- Inflammatory Conditions
- Infections
 - Influenza
 - Chickenpox
 - Tuberculosis
 - Smallpox
- Iron Deficiency
- Endocrinopathy

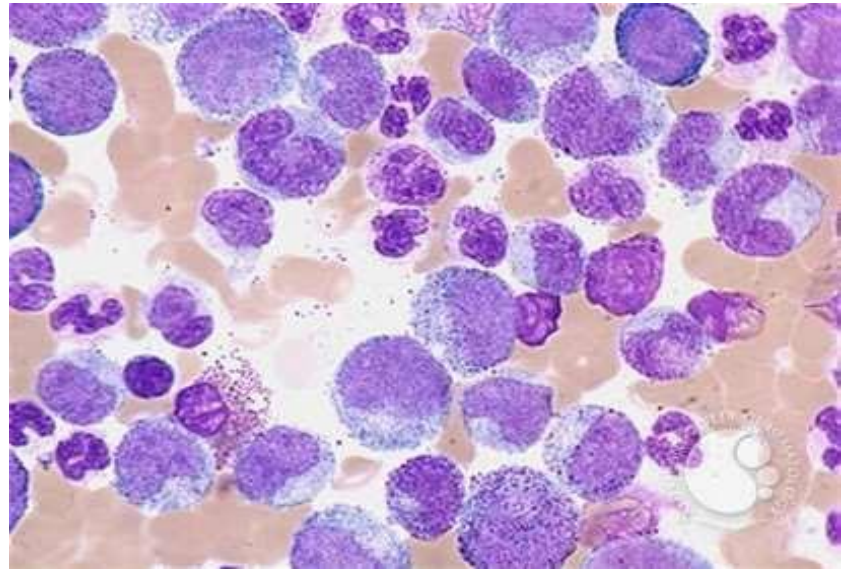


MICROSCOPIC APPEARENCE



MANOCYTOSIS

- **Monocytosis** is an increase in the number of monocytes circulating in the blood. In humans, 800/cmm is regarded as at the upper limit of normal; monocyte counts above this level ($> 800/\text{cmm}$) are regarded as monocytosis.

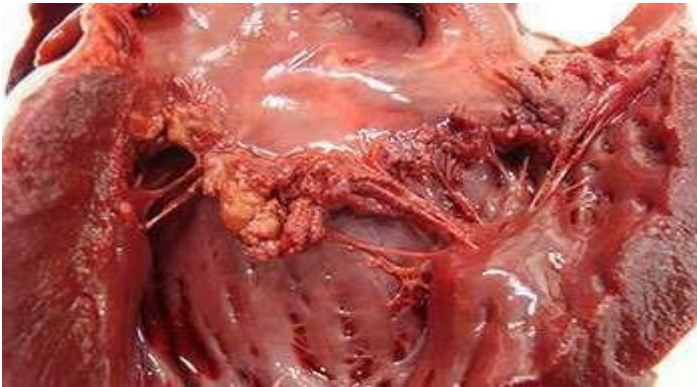


CAUSES

- Bacterial infections
 - Tuberculosis
 - Brucellosis
 - Listeriosis
 - Endocarditis
 - Syphilis
- Viral infection
 - Kala azar
 - Malaria
 - Rocky MSF
- Monocytic & myelomonocytic leukaemia
- Hodgkin's disease
- Autoimmune disease



CLINICAL MANIFESTATION

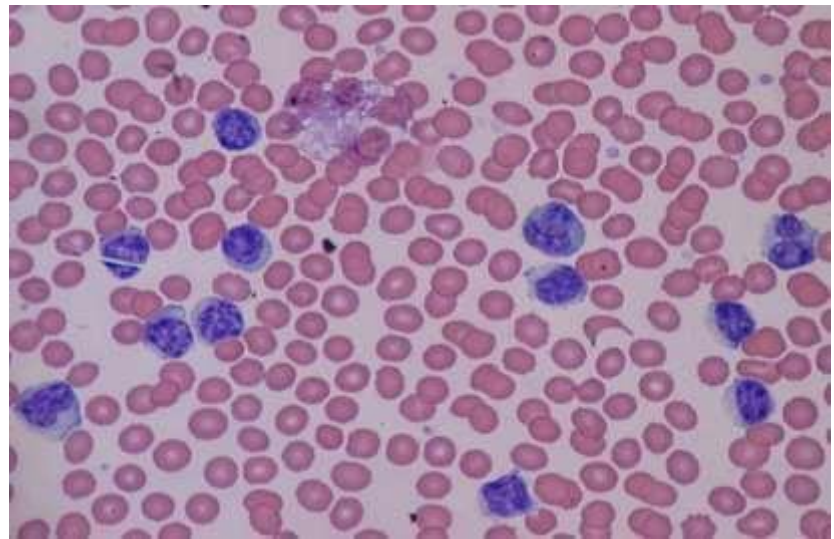


Endocarditis, rocky mountain syndrom, Hodgkin's syndrom



LYMPHOCYTOSIS

- **Lymphocytosis** is an increase in the number or proportion of lymphocytes in the blood. In adults, absolute lymphocytosis is present when the absolute lymphocyte count is $> 4000/\text{cmm}$, in children $> 7000/\text{cmm}$, in infant $> 9000/\text{cmm}$.



CAUSES

- Acute viral infection
 - Mononucleosis
 - Hepatitis
 - Cytomegalo
 - Rubella
 - mumps
- Protozoal infection
 - Toxoplasmosis
 - American trypanosomiasis
- Bacterial infection
 - Tuberculosis
- Chronic and acute lymphocytic leukemia
- Splenomegaly
- Post splenectomy



CLINICAL MANIFESTATION

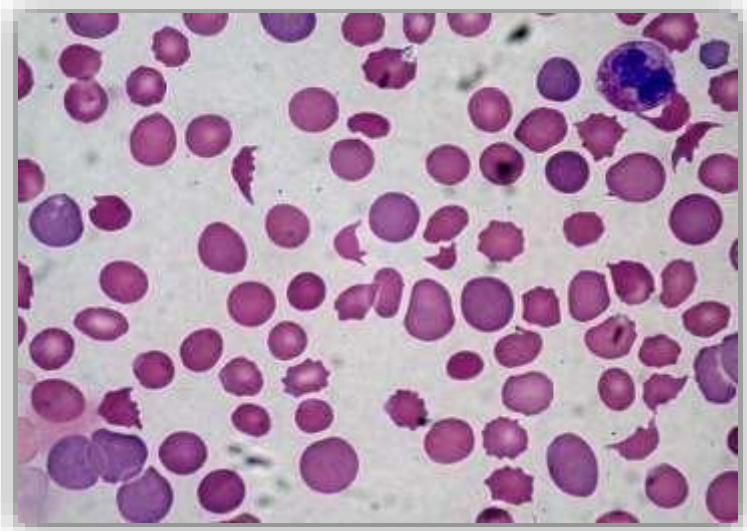


American trypanosomiasis, Molluscum contagiosum, Tuberculosis, Spleenomegaly



LEUKOPENIA

- Total white blood count lower than the reference range for age is defined as leucopenia ($< 4,000/\text{cmm}$ for an adult)
- The major contribution to a leucopenia usually comprises a reduction of peripheral blood neutrophils.



CAUSES

- Bacterial infection
 - Typhoid fever
 - Brucellosis
 - Tuberculosis
- Viral infection
 - Hepatitis
 - Influenza
 - Rubella
- Protozoal infection



CAUSES

- Drugs
 - Anti inflammatory (Phenylbutazone(
 - Anti bacterial (cholramphenicol,trimoxazole(
 - Anti thyroids (carbimazole(
 - Hypoglycaemic (carbimazole(
- Irridation by X-rays or Gamma rays
- Auto immune disease
- Decreased production by bone marrow
- Increased distruction by different systems

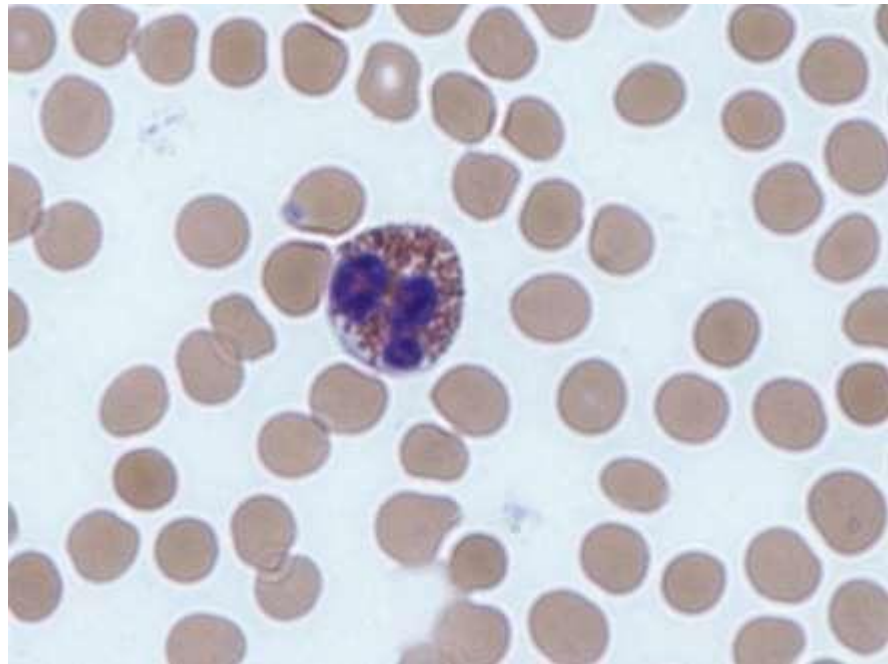


CLINICAL MANIFESTATION



EOSINOPENIA

- **Eosinopenia** is a form of agranulocytosis where the number of eosinophil granulocytes in peripheral blood is lower than expected $< 40/\text{cmm}$.



CAUSES

- Bacterial infection
- By stress reactions
- Cushing's syndrome
- By the use of steroids
- Pathological causes include burns and acute infections.



CLINICAL MANIFESTATION

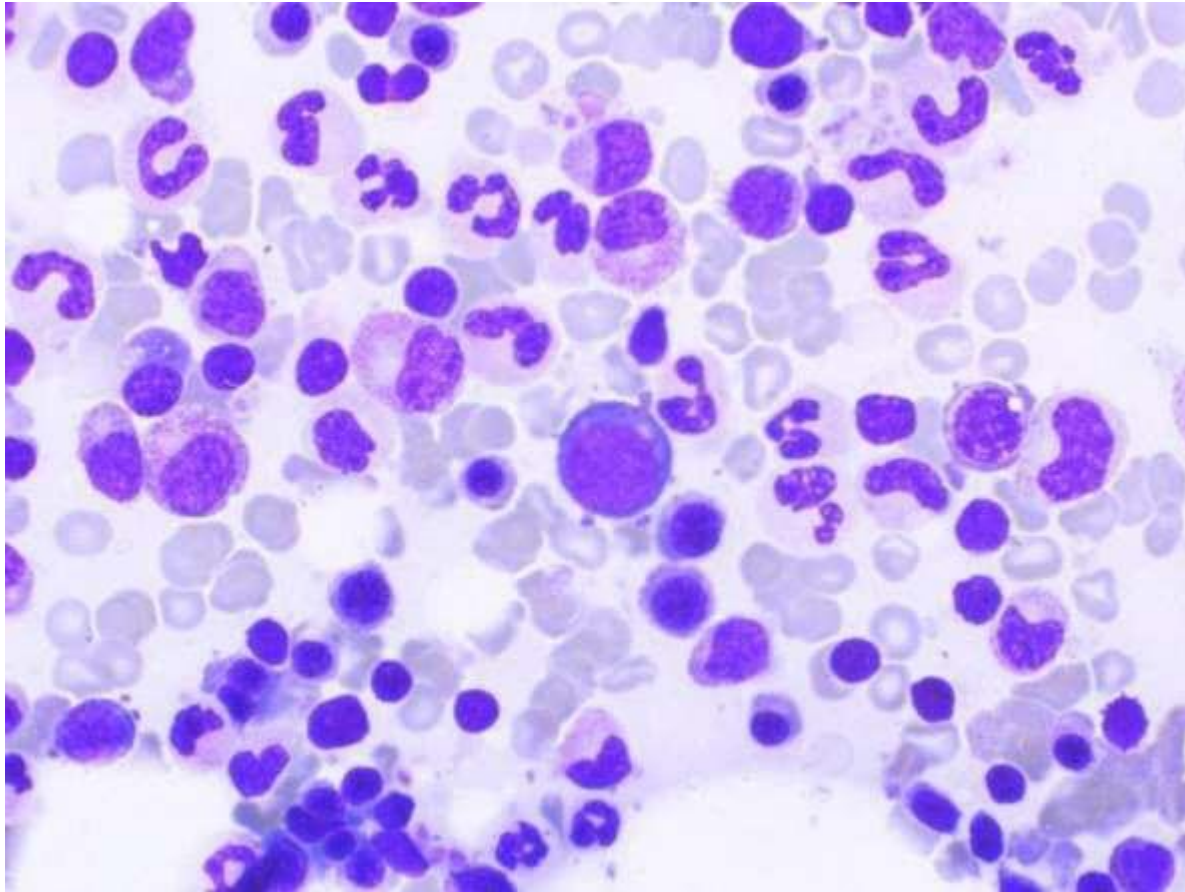


NEUTROPENIA

- **Neutropenia** or **neutropaenia**, is an abnormally low concentration $< 2500/\text{cmm}$ of neutrophils (a type of white blood cell) in the blood. Serve as the primary defense against infections by destroying bacteria, viruses in the blood.
- Neutropenia can be acute (temporary) or chronic (long lasting). The term is sometimes used interchangeably with "leukopenia"



NEUTROPENIA



CAUSES

- Chronic neutropenia:
 - Aplastic anemia
 - Glycogen storage disease
 - Cohen syndrome
 - Congenital immunological disorder
 - Barth syndrome
 - Vitamin B₁₂ deficiency
 - Pearson syndrome
 - Pudlak syndrome
- Transient neutropenia:
 - Typhoid
 - Tuberculosis
 - Cytomegalovirus
 - Propylthiouracil
 - Levamisole
 - Penicillamine
 - Trimethoprim/sulfamethoxazole
 - Clozapine
 - Valproate



CLINICAL MANIFESTATION

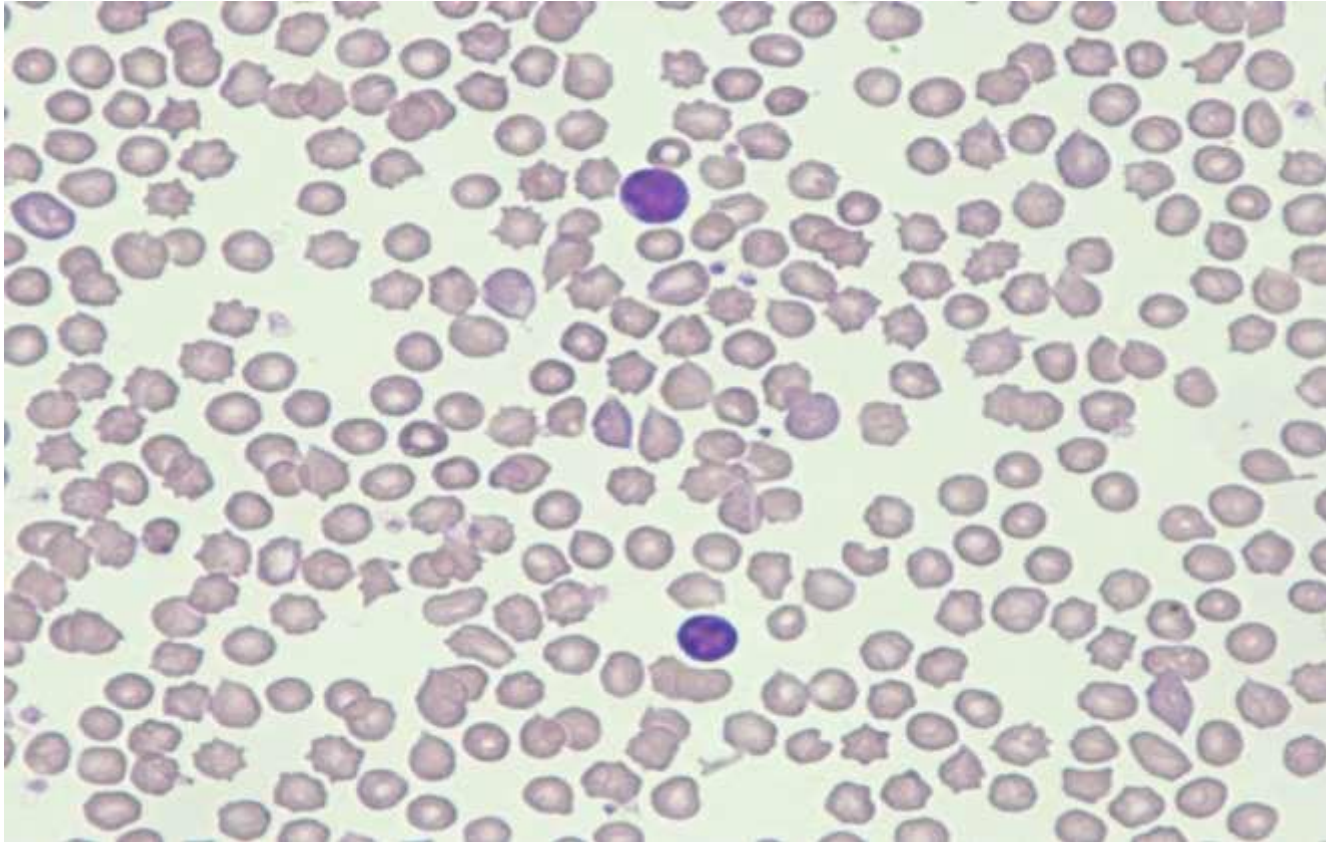


LYMPHOPENIA

- **Lymphocytopenia**, or **lymphopenia**, is the condition of having an abnormally low level of lymphocytes in the blood $<1500/\text{cmm}$.
- Lymphocytopenia may be present as part of a pancytopenia, when the total numbers of all types of blood cells are reduced.



LYMPHOPENIA

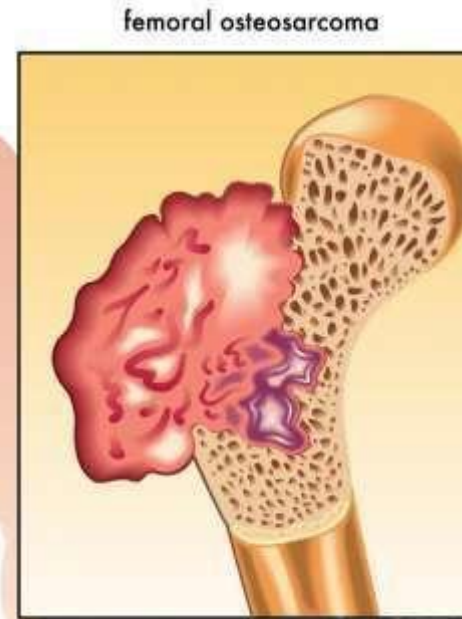
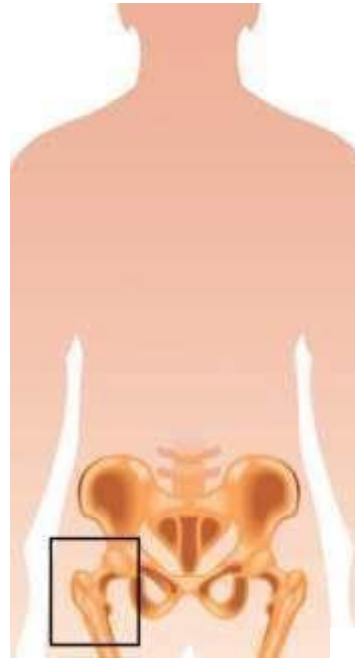


CAUSES

- Bacterial infection
- Viral infection
- Prolonged physical exercise (due to cortisol release)
- Rheumatoid arthritis
- Sarcoidosis
- Iatrogenic (caused by other medical treatments) conditions.
- Large doses of radiation, such as those involved with nuclear accidents or medical whole body radiation, may cause lymphocytopenia.
- Some malignancies that have spread to involve the bone marrow, such as leukemia or advanced Hodgkin's disease

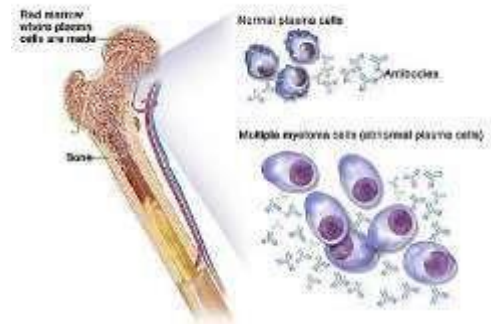


CLINICAL MANIFESTATION



femoral osteosarcoma

Multiple Myeloma



Thank you...!

Dr. Maysara Samer

