

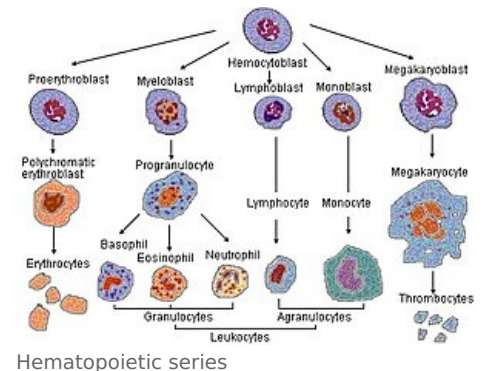
# White Blood cell pathology (paediatrics)

## White blood cell parameters

- leukocytosis :  $> 10,000$ ,
- leukopenia :  $< 4,000$ ,
- neutropenia:  $< 1,000$  (in children 2 weeks to 1 year),  $< 1,500$  (in children over 1 year),
- agranulocytosis:  $< 500$ ,
- lymphocytosis:  $> 5,000$ ,
- lymphopenia:  $< 1,500$ ,
- monocytosis:  $> 800$  or  $> 10\%$  in diff.,
- eosinophilia:  $> 600$  or  $> 10\%$  in diff.,
- basophilia:  $> 100$  or  $> 1\%$  in diff.

## Differential diagnosis of leukocytosis and neutrophilia

- pyogenic infection,
- connective tissue disease
- glomerulonephritis,
- acidosis,
- uremia,
- acute bleeding,
- hemolysis ,
- burns,
- surgery,
- liver necrosis,
- dehydration,
- corticoids,
- catecholamines,
- lead and mercury poisoning,
- bone marrow metastases .



## Physiological causes of leukocytosis and neutrophilia

- Stress,
- physical exertion,
- intense crying in a newborn,
- smoking.

## Leukemoid reaction

The leukemoid reaction represents a situation where we find several tens of thousands of leu/mm<sup>3</sup> + a significant shift to immature forms. Determination of ALP in neutrophils can help in differential diagnosis (in leukemia, ALP is reduced, in a leukemoid reaction as part of an infection or systemic disease, ALP is normal or increased). When in doubt , bone marrow aspiration brings certainty .

## Differential diagnosis of lymphocytosis

### Absolute lymphocytosis

- infectious lymphocytosis,
- infectious mononucleosis,
- pertussis,
- Syphilis,
- TB,
- hyperthyroidism.

### relative lymphocytosis

- measles,
- exanthema subitum.

## Differential diagnosis of neutropenia

### congenital

- reticular dysgenesis,
- congenital pluripotent stem cell disorder,
- m. Kostmann,
- cyclic neutropenia,

- Schwachmann sy.,
- neutropenia during DMP: glycogenosis, m. Gaucher.

### **gained**

- isoimmune neonatal neutropenia,
- vitamin B12 deficiency,
- folic acid deficiency,
- autoimmune etiology,
  - SLE ,
  - JIA ,
  - SCID ,
  - Hyper IgM syndrome,
  - Evans syndrome,
  - lymphomas,
  - drugs: chloramphenicol, antiepileptics, thyrostatics,
  - infection: EBV, CMV, HHV 6, HIV, Parvovirus, hepatitis, varicella, parotitis,
- idiopathic neutropenia.

### **Differential diagnosis of eosinophilia**

- Allergic diseases,
- skin diseases: atopic eczema,
- parasitic infections: toxocariasis, oxyuria,
- m. Hodgkin,
- scarlatina.

## **Links**

### **Source**

- HAVRÁNEK, Jiří: *Hematology - general introduction*. (edited)

### **Related articles**

- Physiological and pathophysiological notes on pediatric hematology (pediatrics) • Neutropenia in children
- Diseases of the white blood component :
  - Leukemia : Acute myeloid leukemia • Acute lymphocytic leukemia • Chronic myeloid leukemia • Chronic lymphocytic leukemia
  - Malignant lymphoma : Hodgkin's lymphoma • Non-Hodgkin's malignant lymphomas
  - Histiocytosis
- Diseases of the red blood component : Anemia • Polyglobulia