Differential white blood cell count (Differential leukocyte count)

Physiological values of leukocyte count: 3,5-10 x 10^9/L blood

Neutrophil granulocytes

Physiological values: 2-7,0 x 10^9/l (40-70%)

Increased number - neutrophilia: bacterial infections, trauma, scorch, bleeding, inflamations, infarction, polymialgy, myeloproliferative disorders, reaction to certain medications (e.g. chorticosteroides). Significantly increased in leukemia, disseminated malignant diseases and complicated childhood infections.

Decreased number - neuthropenia: viral infections, brucellosis, thyphoid, Kala-azar, TBC, sepsis, lupus erithematodes, rheumatoid arthritis, avitaminosis B12 i bone marrow dissorders. Medications like carbamazepine or sulphonamides can decrease a number of neuthrophils.

Band neutrophils (stab neutrophils) cells are younger forms of cells presented with kidney-shape, curved nucleus and not segmented, lobar nucleus. Usually they are representing 3-5% of leukocytes. Increased value indicates a higher demand and expenditure of neutrophils, and is called “left shift” (referring to ratio of immature to mature forms of neutrophils).

Lymphocytes

Physiological values: 1-3 x 10^9/l (20-40%).

Increased number - lymphocytosis: viral infections (EBV-Epstein Barr virus, CMV-cytomegalovirus, rubeola), toxoplasmosis, pertusis, brucellosis, chronic lymphatic leukemia.

Decreased number - lymphopenia: corticosteroid treatment, lupus erithematodes, uremia, legionella disease, AIDS, bone marrow infiltration (tumor), after chemotherapy and radiotherapy.

Subclases: CD4: 537-1571/mm3 (decreased in HIV infection); CD8: 235-753/mm3; CD4/CD8 ratio: 1.2-3.8.

Eosinophil granulocytes

Physiological values: 0.05-0.5 x 10^9/l (1-6%).

Increased number - eosinophilia: asthma i allergic disease, parasitic infestations, skin diseases (especially pemphigus), urticaria, egzema, malignant diseases (including eosinophilic leukemia), irradiation, Loeffler syndrome, recovery after infections. Hypereosinophilic syndromecan be observed in terminal organ damage (restrictive cardiomyopathy, neuropathy, hepatosplenomegaly), withincreased eosinophile number for more than 6 weeks (>1.5 x 10^9/l).

Eosinophilia-myalgi syndrome – muscle pain (myalgia), joint pain (arthralgia), increased body temperature, rash, arms swelling and intense eosinophilia.

Monocytes

Physiological values: 0.3-0.9 x 10^9/l (2-10%).

Increased number - monocytosis: acute and chronic infection (TBC, brucellosis, protozoal infections), malignant diseases (acute myeloid leukemia, Hodgkin lymphoma), myelodisplasia.

Basophil granulocytes

Physiological values: 0.00-0,01 x 10^9/l (0.5-2%).

Increased number - basophilia: viral infections, urticaria, myxedema, after splenectomy, chronic myeloid leukemia, malignant disease, systemic mastocytosis (urticaria pigmentosa), hemolysis, policitemia vera.