Spleen, LN, WBCs
Leucocytosis, Lymphocytosis

dif. dg.: reactive/neoplastic

Leukocytosis – pathologically increased number of granulocytes in peripheral blood (neutro-, eosino-, basophylic)
- neutrophyllic
- bazophylic
- eosinophyllic

Lymphocytosis (viruses)

Monocytosis

Plasmocytosis (rubella)

Leukemoid reaction, shift to the left (immature forms)
Leucopenia, Lymphocytopenia

**Leukopenia** – pathological decrease of granulocytes in peripheral blood (neutro-, eosino-, basophylic)

**Lymphocytopenia** – decrease
- Consequence of toxic effect, radiation, cytostatics...

**Causes:**
- immunologic (anti leukocyte antibodies, hapten type)
- toxic (some infect or medications – direct toxic effect)
- excessive destruction (spleen, paraneoplastic, AIDS)
- quality of leukocytes (ability of migration, phagocytosis...)

Lymphatic node
Lymphnodes

Reactive hyperplasia:
- follicles
- cortex, paracortex
- sinuses

Follicular hyperplasia:
- RA, SLE, Sjögren syndrome
- AIDS (...later loss of mantle zone)
- Castleman disease: localized/multicentric - HHV8

Interfollicular hyperplasia – paracortex:
- neoplastic
- viral infects (EBV, measles, CMV,...
- Phenytoin-induced (Ly, Eo, Pc, Ib)
- SLE (Ib, Pc)

Sinus histiocytosis:
- reactive (infect, trauma/surgery, tumor...)
- Dermatopathic lymphadenopathy
- Rosai-Dorfman disease
- hemophagocytic sy. (infection, especially viral)
Infectious mononucleosis
Dermatopathic lymphadenopathy

Giemsa

S100
Castleman disease
Lymphnodes

- primary/secondary neoplasms
- inflammatory processes

Lymphadenitis

nonspecific/specific

Acute nonspecific lymphadenitis

- reaction to pathological process in the region (inflammation, neoplasm, degeneration...)
- LN is enlarged
- hyperplasia of B and/or T zone
- sinus histiocytosis
Lymphnodes

Lymphadenitis

Chronic nonspecific lymphadenitis
similar changes like in acute lymphadenitis
+ fibrosis
+ postinflammatory atrophy
+ histiocytic (dermatopathic, toxoplasma)

Purulent nonspecific lymphadenitis
Purulent interstitial inflammation
- abscessing/nonabscessing

Viral lymphadenitis
- transformation/stimulation of T or B lymphocytes
- blastic transformation of lymphocytes
Lymphnodes

Lymphadenitis

**Specific lymphadenitis**
- specific histopathologic finding
  Tbc, BCG, sarcoidosis, syphilis, lepra

**Etiologically specific lymphadenitis**
- typical morphology...characteristic for etiological agens
  Toxoplasmosis (Piringer-Kuchinka), EBV, cat-scratch, tularemia, yersinia...
Toxoplasmic lymphadenitis (Piringer-Kuchinka)
Cat-scratch disease
Extranodal lymphatic tissue

MALT (mucosa associated lymphoid tissue)
- may react independently from other lymphatic system
- represents protective system of mucosas (GIT, respiratory system, conjunctiva, skin...)
- both B and T lymphocytes, ...“homing“ – return to lamina propria of the mucosa after leaving (lymphatic vessels, ductus thoracicus, blood, MALT)
- extranodal lymphomas: Hodgkin/nonHodgkin
  nonHodgkin: MALT lymphoma (indolent course) low/high grade B or T lymphomas
Extranodal lymphatic tissue

MALT (mucosa associated lymphoid tissue)

GIT
Immunoproliferative intestinal disease (IgA plasmocytes) – Mediterranean area
Enteropathy (gluten allergy) associated T-cell lymphoma

Waldayer ring
B-cell lymphomas (+ extramedullary plasmocytoma)

NK/T lymphoma – nasal type

Skin
T-lymphomas (Mycosis fungoides)
MALT (boreliosis), other B-lymphomas

Salivary, lacrimal, thyroid gland
MALT, -> high grade B-lymphomas

Mediastinum
MALT (thymus)
Spleen
Galen: „organon pleunum mysterii“

**Hyposplenism (asplenism)**
Atrophy - senile
- after diseases

**Hypersplenism - splenomegaly**
Hyperplasia
- red pulp (phagocytic activity, extramedullary hemopoesis, venostasis, storage diseases...)
- acute septic tumor of the spleen
- white pulp (immune reaction)
- extramedullary hemopoesis (PMF)

**Hemolytic anemias**
- spherocytosis, thalassemia, sicle cell disease..
- immunologic anemias, malaria
- thrombocytopenias
Spleen

Hypersplenism - splenomegaly

Primary tumors - B-cell lymphomas:
• Splenic marginal zone lymphoma
• Hairy cell leukemia
• Hodgkin lymphoma

Secondary tumors
• CML, AML, Lymphomas (CLL)
• Carcinomas

Splenectomy - consequences: postsplenectomomic infections
Extramedullary hematopoiesis in PMF
Spleen – other diseases

Inborn immunodeficiencies
B or T cell deficit

Cysts
- Epithelial cysts
- Parasitic cysts
- Posttraumatic cysts

Rupture of spleen
- In disease: malaria, salmonelosis, tumor infiltration...
- Trauma (...implantation metastases = peritoneal splenosis)
Rupture of the spleen
Normal thymus
Thymus

Hypoplasia/agenesis
- inborn defects (DiGeorge syndrome, reticular dysgenesis)
- acquired (involution in young) – consequence of stress, malnutrition, radiation, corticoids...

Acute thymic involution

HE

AE1 - cytokeratins
Inborn hypo/aplasia thymic cortex
Thymus

Hyperplasia

- follicular hyperplasia (B-cells)

Myastenia gravis, SLE, sclerodermia, Graves disease...
Thymus

Thymoma
- Thymoma A: thymic epithelium + T lymphocytes
- Thymoma B: thymic epithelium (infiltration, local metastases)

- Thymic carcinoma, Thymic carcinoid (NET),
  Lymphomas (B,T, cHL)
Thymoma type A
Thymic carcinoma