

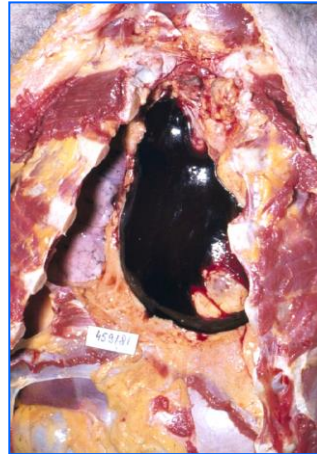
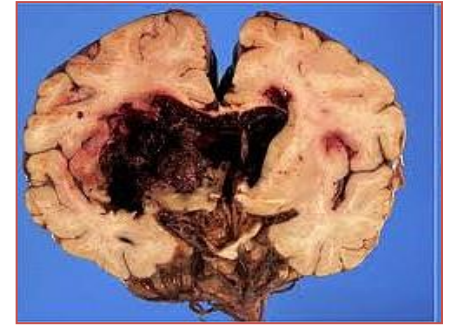
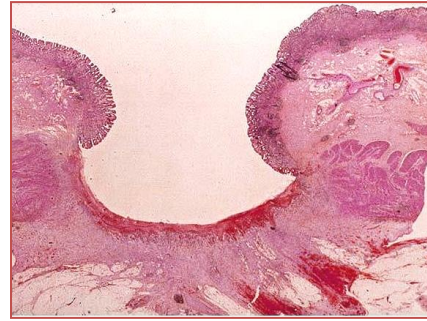
Hemorrhages

Anemias

Shock

Classification according to the mechanism:

- hemorrhage due to arrosion
- hemorrhage due to rhexis
- hemorrhage due to diapedesis
- hemorrhage due to necrosis
- hemorrhagic diathesis



Classification according to direction (external, internal, -concealed)

Classification according to the size

- petechia, ecchymosis, suffusion, hematoma

Hemorrhage due to diapedesis

- Vitamin C deficiency
- Sepsis
- Meningococcus-sepsis
(Waterhouse-Friderichsen syndr.)
- Immune-mediated vasculitis
(Schönlein-Henoch purpura)
- Thrombocytopenias
- Fat embolism



Hemorrhagic diathesis

(decreased coagulability)

- coagulopathies (loss of coagulation factors)

DIC

Vitamin K deficiency (liver cirrhosis!)

hemophilia A (deficiency of factor VIII)

- thrombocytopathies

thrombopenias (leukaemias, bone marrow metastases,
cytostatics)

thrombasthenias (aspirin, NSAIDs)

- vasculopathies

Schönlein-Henoch purpura

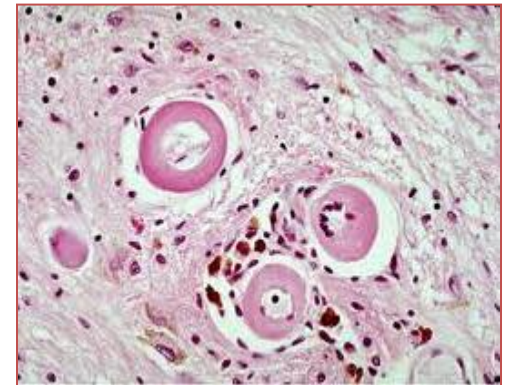
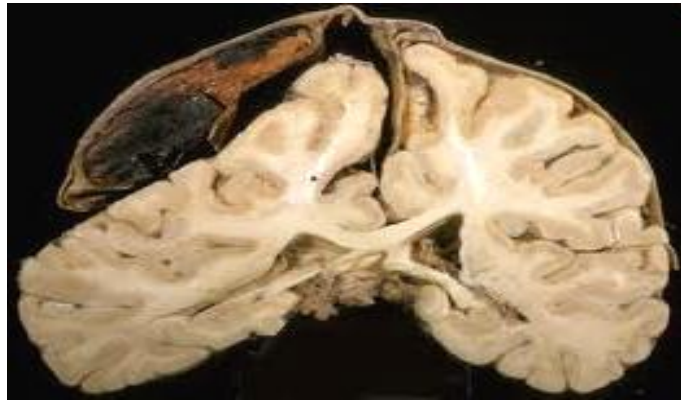
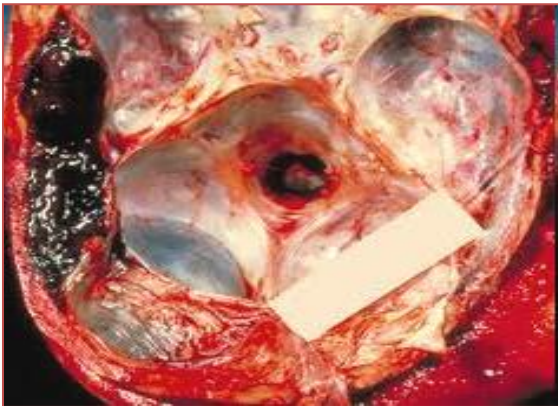
Vitamin C deficiency



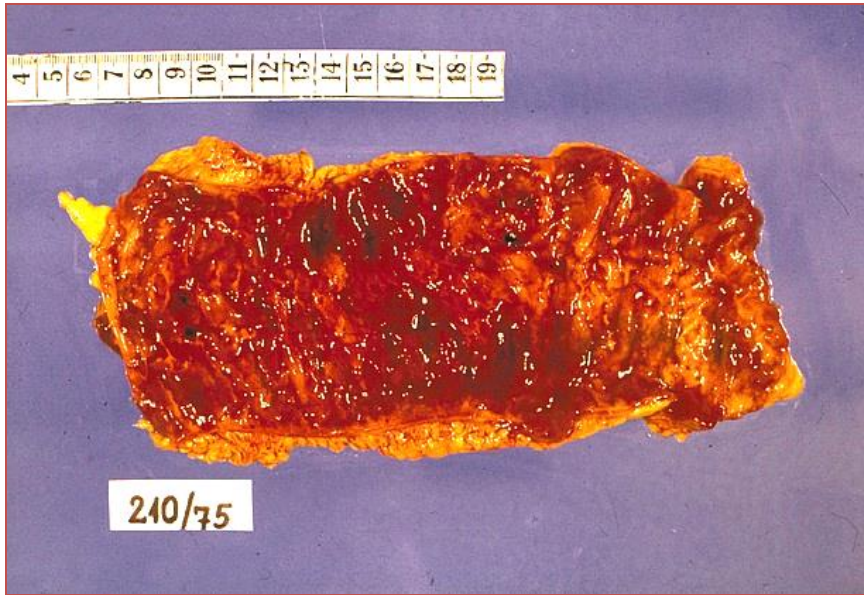
Intracranial hemorrhages

- epidural bleeding (trauma)
- subdural bleeding (trauma) - acute, chronic
- apoplexia (hypertension)
- subarachnoideal bleeding (berry aneurysms)

- vessel malformation
- infective endocarditis
(*Streptococ. viridans*)
„mycotic aneurysm“
- atherosclerosis

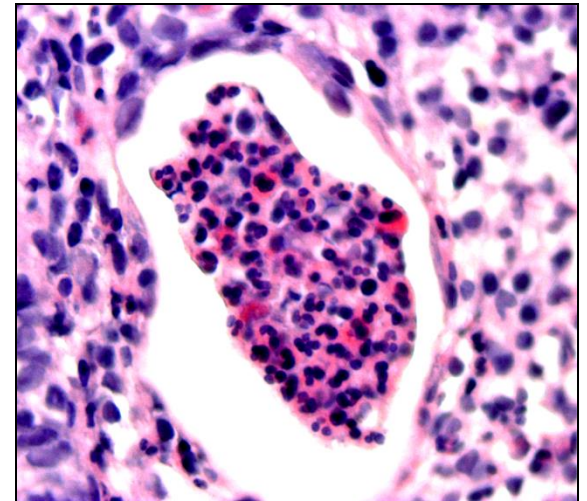
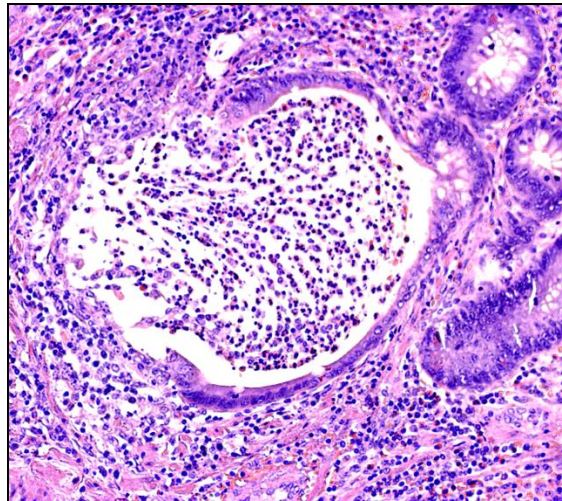
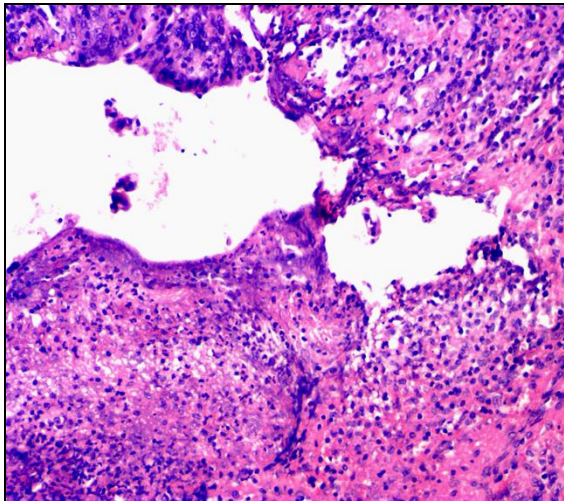


Ulcerative colitis



Complications:

- hematochesia (anemia)
- pseudopolyps
- mucosal atrophy
- toxic megacolon
- sclerotizing cholangitis
- colonic cancer (after 8-10 years)



Outcome of hemorrhages



hemosiderosis

exsanguination - hemorrhagic shock

Iron deficient anemia

Anemias

Decreased amount of hemoglobin

- decreased number of red blood cells
- normal red cell count, but reduced Hb-content



GENERALIZED HYPOXIA

Symptom, not a disease!!

- A./ Decreased red blood cell production
- B./ Hemolysis
- c./ Blood loss

Classification of anemias

microcyter
normocyter
macrocyter

hypochromic
normochromic
hyperchromic

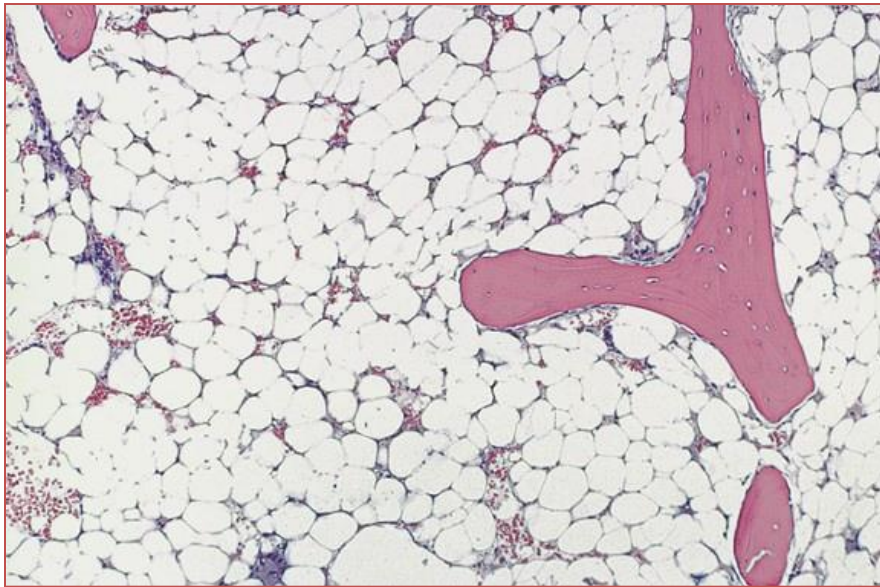
acute
chronic

A./ Decreased red blood cell production

Deficiencies

- iron (chronic blood loss, strict vegetarians, malabsorptions, increased Fe-requirement [e.g. pregnancy])
- vitamin B12, folic acid
- erythropoietin (chronic renal insufficiency, bone marrow metastasis)

Aplastic anemia:



bone marrow insufficiency
(gene mutations, cytostatic
drugs, irradiation, viruses,
toxic chemicals...)

70%: obscure

pancytopenia

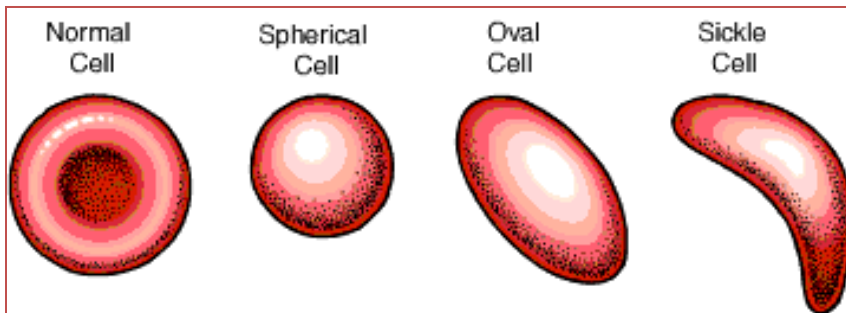
life-threatening condition

stem cell transplantation

B./ Hemolysis (destruction of RBCs, membrane destruction)

Congenital (enzyme defects)

spherocytosis
elliptocytosis
hemoglobinopathies (thalassemias)



Acquired

a./ immune hemolysis

- Rh-incompatibility
- autoimmune
- drug-induced

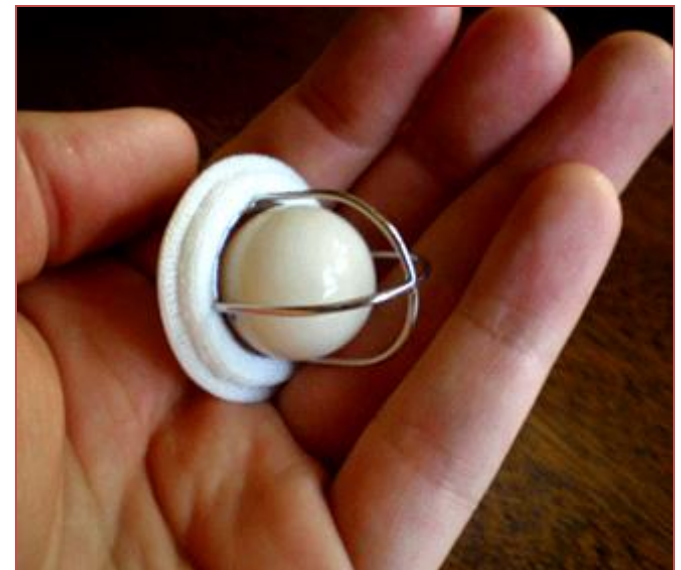
b./ non-immune hemolysis

- infections (malaria)
- mechanical
- toxic (Wilson disease)

Jaundice (indirect bilirubin) - kernicterus

Hyperplastic bone marrow

Bilirubin stones



c./ Blood loss

Acute

Epistaxis

Hematemesis

Melena

Hematochesia

Trauma

Hypovolemic shock

Chronic (occult)

Women (periods)

Malignant tumors

Chronic ulcer

NSAIDs

Colonic polyps

Ulcerative colitis

Helmints

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