Hemoblastosis. Acute Leukeosis

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ABSTRACT

Hemoblastoses are tumors arising from hematopoietic cells. According to world statistics, leukemia is observed in 3.3-4.7 cases out of 100,000 children, children under 15 years of age. 40-46% of them correspond to children aged 2-6 years.

Keywords:

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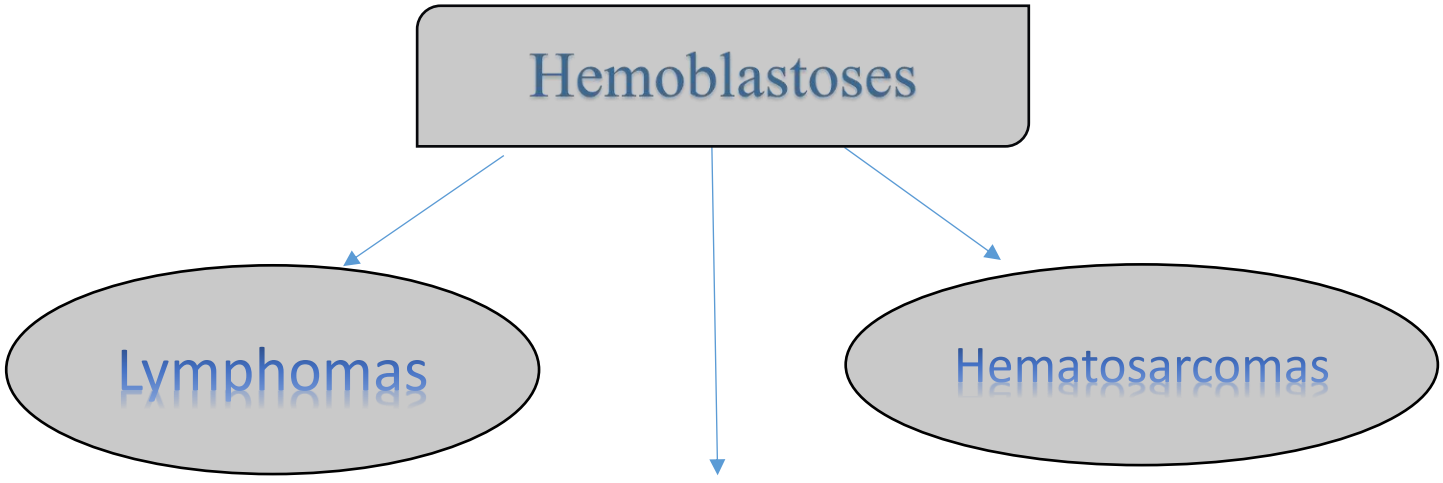
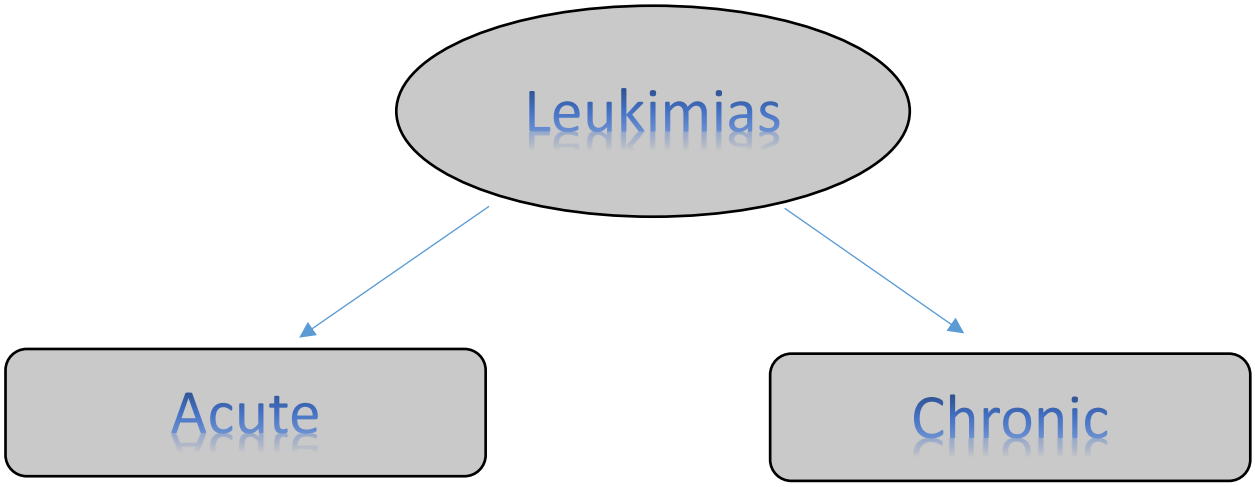
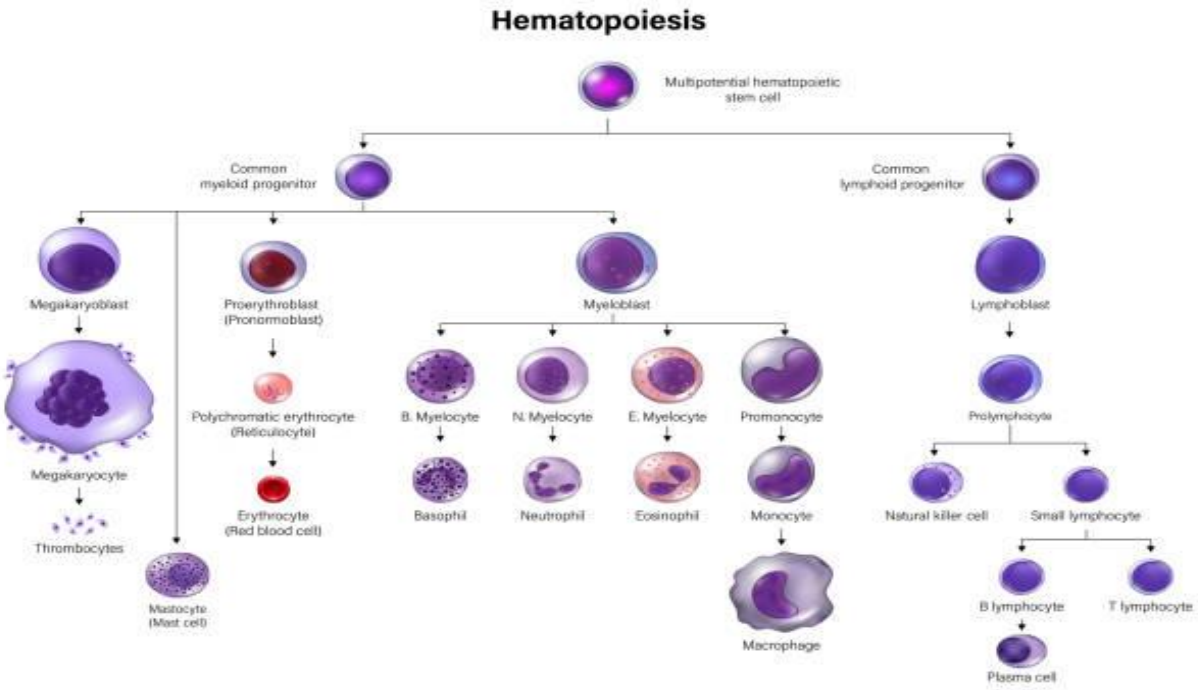




Classification of acute leukemias

FAB - classification established in 1975 by hematologists of France, USA and England

- Acute myeloblastic leukemia
- Acute lymphoblastic leukemia
- Myelodysplastic syndrome



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Scheme of hematopoiesis, maturation in 6 stages
If a tumor is detected in the cells of the first 4 stages, it is acute leukemia, and if changes are observed in stages 5 and 6, it is chronic leukemia.

Acute leukemias are divided into 2 parts

Acute myeloblastic

Acute lymphoblastic

- MO - acute undifferentiated

B - lymphoblastic leukemia

- M1 - acute myeloblastic leukemia

T - lymphoblastic leukemia

- M2 - incomplete myeloblastic leukemia cells
- M3 – promyelocytic leukemia
- M4 – myelomonocytic leukemia
- M5 – monoblastic leukemia

- M6 – erythrocytosis leukemia
- M7 – megakaryoblastic leukemia

Etiology

Physical factors (ionizing rays), chemical factors (phenol, benzene derivatives)
biological factors (herpes from viruses, Burkitt's lymphoma), chromosomal changes, and taking some drugs (butadione, chloramphenicol, cytostatics).

Pathogenesis

The main connection in the development of the disease is that negative factors lead to changes (mutations) in hemopoietic cells. At the same time, the cells do not stop growing, cannot differentiate, and do not form into normal mature cells. Therefore, all cells forming a leukemic tumor can be a stem cell or a progenitor cell in any direction of hematopoiesis. According to monoclonal growth genes, a mutated hematopoietic cell leads to the formation of tumor clones in the bone marrow. The mutated stem cell completely takes over the hematopoietic site, crowding out the healthy hematopoietic stem. The mitotic cycle and cell life span are prolonged. A single mutated cell divides to give rise to 10 - 12 cells within 3 months, and clinical symptoms begin. Pathological foci of blood formation also appear in organs such as the kidney and brain.

Clinic

Initial period: decreases without clinical symptoms
The clinical symptoms of the exacerbation period consist of 5 main syndromes:
1. Hyperplastic
2. Hemorrhagic
3. Anemic
4. Infectious complications
5. Intoxication syndrome

Hyperplastic syndrome:

Swelling of lymph nodes is symmetrical, painless, not united with each other and with the surrounding tissue, doughy consistency.

Hemorrhagic syndrome:

Severe thrombocytopenia and insufficient production of coagulation factors in the liver can also occur. Hemorrhagic symptoms are different: from small points and speckled hemorrhages on the skin and mucous membranes to profuse bleeding, bleeding from the nose and gums, bleeding from the uterus, bleeding from the gastrointestinal tract, and hematuria.

Anemic syndrome:

Severe anemia is observed when Hb is below 60 g/l, erythrocytes are below 1.0-1.2*12/l. Patients are disturbed by general weakness, headache, dizziness, rapid fatigue, decreased work ability, and blurred vision.

Infectious complications:

1. Bacterial infections 70-80%
• ulcer-necrotic angina, bromitis, pneumonia, otitis, sinusitis, sinusitis
• sepsis purulent diseases
2. Viral (4-12%) and fungal (18-20%) diseases

Intoxication syndrome

Leukemia cells develop due to frequent breakdown and infection. General weakness, profuse sweating, increased temperature, adynamia, nausea, vomiting, and weight loss are observed.

Clinical and laboratory diagnostics

1. General blood analysis
2. Bone marrow puncture (cytochemical examination)
3. Bone marrow biopsy (myelogram)

In general blood analysis, the image of expanded blood analysis in acute leukemia is specific. In addition to anemia and thrombocytopenia, changes in the number of leukocytes: from 10x109\L to 100x109\, with a decrease in the number of normal and leukopenia (38%) or sub leukemic (44%) blood cells, and in only 18% of patients the number of leukocytes is 50x109\1 exceeds.
In 30% of patients, blast cells are not found in the hemogram. In most patients, the number of blast forms ranges from a few percent to 80-90% and one or two mature leukocytes are detected. This condition is called a leukemic cavity. Finding absolute leukocytosis and tumor cells in leukoformula in general blood analysis is an important step and requires in-depth laboratory tests in the future.
does. This is a myelogram. Bone marrow analysis – myelogram

An increase in the number of blasts in the myelogram of more than 30% (currently this indicator has decreased to 20%) confirms the

diagnosis of acute leukemia as the main examination.
Since it is difficult to morphologically distinguish the tumor substrate in acute leukemias, the type of acute leukemia is determined as a result of cytochemical examinations, and the diagnosis is confirmed.

For cytochemical and histological analysis, in addition to the bone marrow puncture, a sample of the spinal fluid, i.e. cerebrospinal fluid, is taken. Normally, there should be nothing in the cerebrospinal fluid, but blast cells are found in leukemia.

Stages of acute leukemia and blood picture