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БИФЕНОТИПИЧЕСКИХ ОСТРЫХ ЛЕЙКОЗОВ

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IMMUNOPHENOTYPIC CHARACTERISTICS OF BIPHENOTYPIC ACUTE
LEUKEMIA

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Резюме. В статье рассмотрены результаты проведенного анализа медицинских карт стационарных пациентов с установленным диагнозом острый лейкоз со смешанным фенотипом с целью определения наиболее часто встречающихся вариантов заболевания, а также наиболее часто встречающихся антигенов бластных клеток.

Ключевые слова: острый лейкоз, смешанный фенотип, иммунофенотип.

Resume. The article discusses the results of the analyzing patient's records with an established diagnosis of biphenotypic acute leukosis in order to determine the most common variants of them and most frequently identified antigens of blast cells.

Keywords: acute leukemia, mixed phenotype, immunophenotype.

Relevance. Acute leukemia is a neoplastic disease of the blood system that develops as a result of the malignant transformation of a stem or committed hematopoietic cell.

Worldwide, leukemia accounts for approximately 2.5% of new cases of cancer annually and is responsible for 3% of cancer patient deaths worldwide [1, 2].

Acute leukemia with a mixed phenotype is the least studied form of leukemia and the most difficult to diagnose and treat, as the bone marrow and peripheral blood of patients often lack clear signs of blast cell differentiation along one of the hematopoietic lineages. This paucity of research is also due to its rarity among all variants of acute leukemia.

Acute leukemia with a mixed phenotype is most often associated with a poor prognosis. According to the data presented in the literature [3, 4], treatment of acute leukemia with a mixed phenotype according to protocols provided for acute lymphoid leukemia has a more favorable outcome than therapy similar to that for acute myeloid leukemia, however, in practice, an individual approach based on the immunophenotypes of blast cells in the blood of patients is most often used.

Aim: to identify the most common clinical, laboratory, and immunophenotypic features of acute leukemia with a mixed phenotype.

Objectives:

1. To conduct a retrospective analysis of the medical records of inpatients admitted to the Minsk Scientific and Practical Center from 2016 to October 2024 who were diagnosed with acute leukemia with a mixed phenotype.

2. To identify the most common phenotypic variants of biphenotypic acute leukemia.

Materials and methods. A retrospective analysis of 14 medical records of inpatients treated at the State Scientific and Practical Center for Chemotherapy and Gynecology from 2016 to October 2025 with a diagnosis of biphenotypic acute leukemia, or acute leukemia with a mixed phenotype, was conducted.

Statistical data processing was performed using MS Excel and the IBM SPSS Statistics statistical software package.

Results and their discussion. The mean age of the study group was 41.3 years. The gender distribution was as follows: 11 (78.6%) men and 3 (21.4%) women. Deaths occurred in 7 (50.0%) patients. Genetic chromosome abnormalities were detected in 4 (28.8%) patients and included trisomy 11, translocation of the long arm of chromosome 11, trisomy 8, t(15;17) and t(13;21).

Lymphocyte/myeloid leukemia was detected in 6 (42.9%) patients, including the T/myeloid leukemia variant in 5 (83.3%) patients, and the B/myeloid leukemia variant in 1 (16.7%) patient. The myelo/lympholeukemia variant was determined in 5 (35.7%) patients, including myelo/T-lympholeukemia in 4 (80.0%) patients, and myelo/B-lympholeukemia in 1 (20%) patient. A rare variant of T-lymphocyte/B-lympholeukemia/myeloid leukemia was detected in 1 subject (7.1%). The variant of mixed acute leukemia T-lymphocyte/B-lympholeukemia was determined in 1 (7.1%) patient. For the one patient diagnosis of the differentiation line was difficult (Figs. 1, 2, 3).

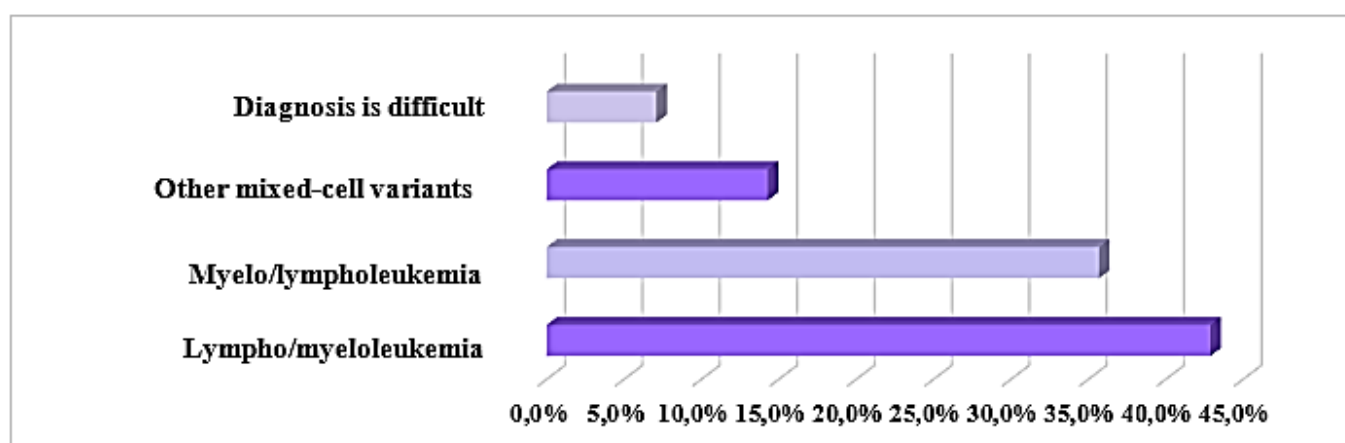


Fig. 1 – Occurrence of individual variants of biphenotypic acute leukemia

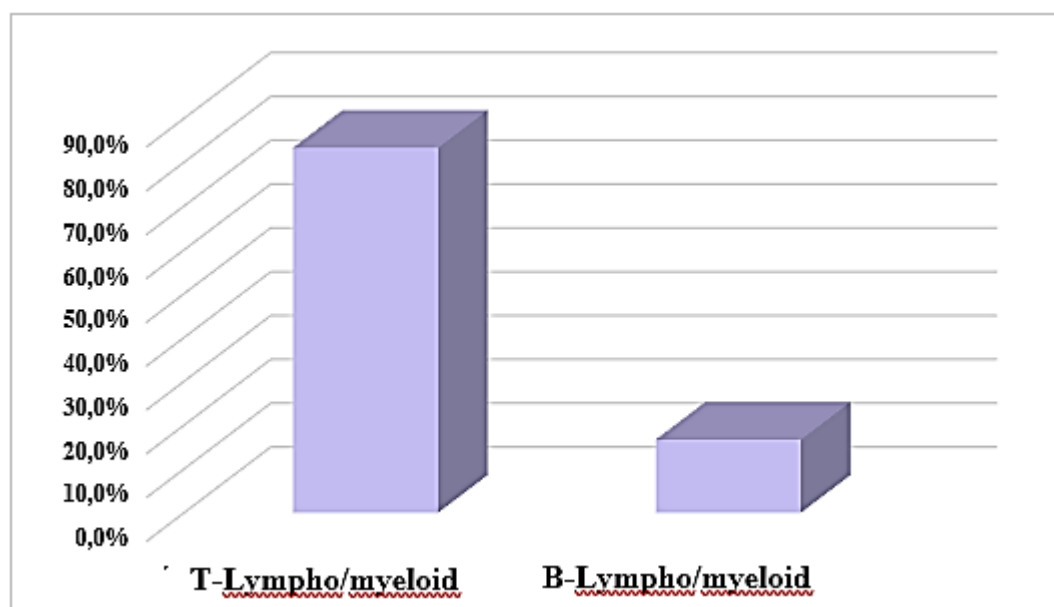


Fig. 2 – Incidence of lympho-/myeloleukemia

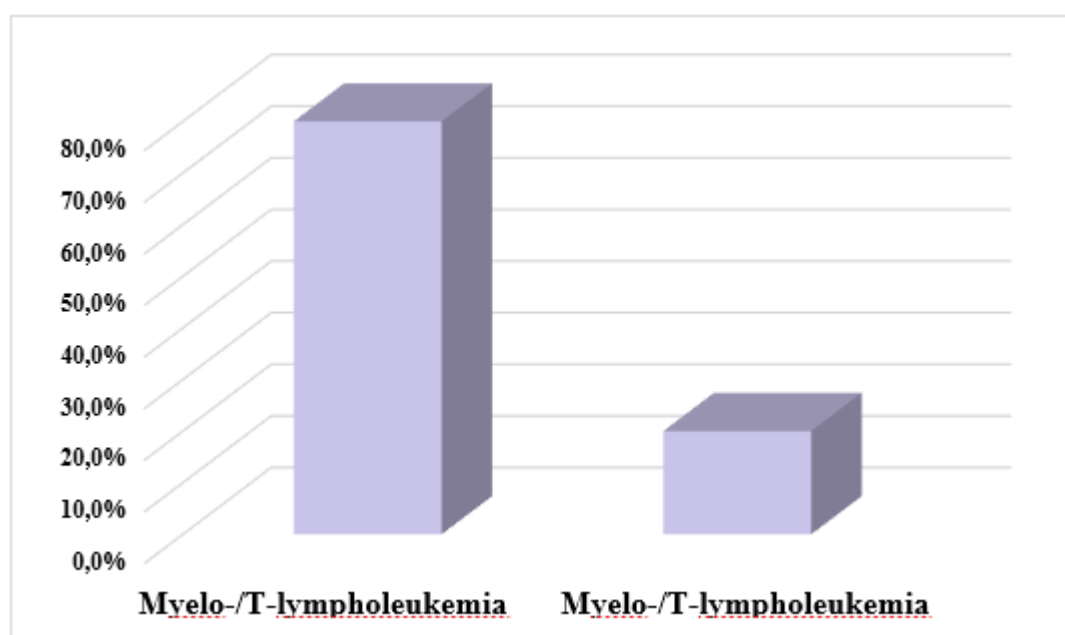


Fig. 3 – Incidence of myelo-/lymphocytic leukemia

The most common blast cell antigens found in mixed-phenotype acute leukemia variants of the T-/myeloid leukemia and myelo-/T-lymphocytic leukemia variants are CD2, CD7, CD9, C13, CD34, and HLA-DR.

Conclusions:

1. During the 9-year study period, 14 cases of biphenotypic acute leukemia were recorded in the Republic of Belarus.
2. The mortality rate was 50.0%.
3. Among patients with acute mixed-cell leukemia, men predominate (78.6%).
4. The most common variants of biphenotypic acute leukemia are myelo-/T-lymphocytic leukemia and T-/myeloid leukemia with a characteristic blast cell immunophenotype of CD2, CD7, CD9, C13, CD34, and HLA-DR.

5. The paucity of studies of acute leukemias with a mixed phenotype opens up prospects for further research.

Literature

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