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Neonatal Acute Lymphoblastic Leukemia: A Case Report

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Abstract

Congenital leukemia is rare and represents less than 1% of childhood leukemia. The newborn is not the elective patient of this pathology, but its occurrence at an early age is rare with a clinical presentation, sometimes atypical, must be highlighted, as well as their biological characteristics and their prognosis in our paper we report the case of a 34-day-old newborn whose clinical presentation was an anemic syndrome and an infectious syndrome without tumor syndrome; our observation illustrates an exceptional mode of revelation of acute leukemia in its hyperleukocytic form and the prognosis generally remains very poor, in particular for the lymphoblastic forms.

Subject Areas

Hematology, Pediatrics

Keywords

Leukemia, Lymphoblastic Leukemia, Myeloblastic Leukemia, Neonatal

1. Introduction

Acute leukemia is an exceptional condition in the neonatal period and has a poorer prognosis in older children [1].

It accounts for less than 1% of childhood leukemias and appears at birth or in the first few weeks of life, but its occurrence at an early age is rather a bad prognostic factor [2] [3]. In addition, children with trisomy 21 have a 10 to 20 times higher risk of developing leukemia particularly [4].

We report 1 case of neonatal acute lymphoblastic leukemia (ALL), with a rapid and fatal evolution.

2. Observation

A 34-day-old male baby, the second of two siblings, from a 23 years old mother. The non-consanguineous parents had no specific personal or family history.

Badly monitored pregnancy, 36 weeks of amenorrhea, home birth with poor adaptation to extrauterine life requiring a stay in neonatology for respiratory distress. There was no previous bleeding syndrome. The interview did not reveal any medication or exposure to toxins during pregnancy.

The newborn was admitted to the pediatric emergency room for fever and refusal to feed. Clinical examination revealed a febrile infant at 39˚, pale with discolored conjunctiva, without hemorrhagic signs, the abdomen was distended, no hepatosplenomegaly. The neurological examination was normal.

In addition to bone marrow failure syndrome, a complete blood count (CBC) was performed showing anemia at 6 g/dl, hyperleukocytosis at 54,860/mm^3, thrombocytopenia at 34,000/mm^3 with the presence of 86% blasts at blood smear. CRP and PCT were positive at 26 mg/l and 3.89 ng/ml respectively.

The myelogram showed a medullary invasion by 90% of blasts. The rest of the infectious tests was negative, including the ECBU, the CSF study and the chest X-ray.

Immunophenotyping showed a profile of acute lymphoblastic leukemia in its hyperleukocytic form.

The initial tests found no testicular or bone involvement, renal ultrasound and echocardiography were normal.

Symptomatic therapy was started early, but the evolution was devastating and the newborn died in a severe septic state 4 days after diagnosis and even before the start of chemotherapy.

3. Discussion

Neonatal acute leukemia is defined as the presence at birth or within the first 4 weeks of life of immature hematopoietic cells in the blood and bone marrow with infiltration of non-hematopoietic tissue [1].

According to French epidemiological data, the global incidence of acute leukemia in the first year of life is 32.1 cases per million/year, including 17 cases per million/year for AML and 15.1 cases per million per year for ALL [4]. At this time of life, AML is also more frequent than ALL with a ratio ranging from 1.5:1 to 3:1 [2].

A cytogenetic abnormality responsible for a rearrangement of the MLL gene on chromosome 11 is present in more than 80% of children with ALL during the first year of life. Among the anomalies responsible for this rearrangement are the reciprocal translocations t (9; 11) and t (11; 19), the t (11; 19) is the most frequent in the neonatal period. These translocations lead to the fusion of the MLL gene with other genes, and to the production of hybrid proteins that impact on the growth and differentiation of granular and monocytic lineages [1].

In our case, the clinical signs of the disease were an anemic syndrome and an

infectious syndrome without tumor syndrome. Considering this clinical case, other differential diagnoses could be evoked, in particular viral fetopathy (cytomegalovirus, rubella, herpes) or parasitic fetopathy (toxoplasmosis). More generally, this initial diagnosis should also evoke a B clonal proliferation in the context of HIV infection or a transient leukemic reaction ("transient leukemia") in a newborn with trisomy 21. The last hypothesis, characterized by the high frequency of spontaneous remissions, must be clearly distinguished from true acute leukemia and requires special management [5].

The clinical signs, maternal and fetal serology, and myelogram allow a rapid orientation of the diagnosis.

Unfortunately, in our context, the clinical signs were poor in the absence of tumor syndrome or typical skin lesions which are the most frequent modes of revelation of congenital leukemias (72% and 61% respectively) [6], as well as the rapid and unfavorable evolution, maternal and fetal serology and cytogenetic study were not performed. As well, the major hyperleukocytosis, the marrow invasion by blast cells and the results of the immunological study could not lead to any other diagnosis than acute leukemia.

The prognosis of neonatal acute leukemia remains generally very worse, especially for lymphoblastic forms, and generally worse than in older children [2].

4. Conclusion

Acute leukemia in its neonatal form is characterized by a rapid doubling time of the tumor cells and by its rapid evolution. Although infantile acute lymphocytic leukaemia commonly presents with characteristic features of hepatosplenomegaly, leukaemia cutis or infiltrative disease of the extramedullar and central nervous system, and non-specific symptoms are not uncommon. For these reasons, the diagnosis must be made as early as possible. The observation of a discreetly disturbed blood count should not be a cause for delay in diagnosis, because whatever the form of neonatal leukemia, its prognosis is critical.

Conflicts of Interest

The authors declare no conflicts of interest.

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