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A rare case of congenital acute myeloid leukemia in a new-born misdiagnosed as neonatal sepsis: Why Peripheral film review is an essential element in diagnosis.

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Abstract:

When leukemia develops while baby is still in utero, it is known as Congenital leukemia (CL). CL is an extremely rare form of acute leukemia. CL are mostly Myeloid in origin in contrast to the pediatric leukemias that are usually of Lymphoid type. Congenital leukemias have a poor prognosis as compared to transient abnormal myelopoiesis that usually affect 10% of newborns associated with down syndrome and may also go into spontaneous remission. CL poses a diagnostic dilemma as clinical features are quite similar to sepsis. This case report also highlights the importance of reviewing peripheral blood films of all newborns that can easily differentiate between reactive white blood cells and abnormal cells like blast cells.

Keywords: Congenital acute myeloid leukemia, congenital leukemia, peripheral blood film..

Introduction:

Congenital leukemia (CL) is an extremely rare form of acute leukemia that develops in utero and reported to affect 1 child in 5 millions.¹ It is usually diagnosed at birth or within 1st month of life.^{1,3} An estimated 200 cases are reported in the literature worldwide.³ Most Congenital Leukemias are Myeloid in origin in contrast to pediatric leukemias which are usually of Lymphoid type.^{1,3} Congenital leukemias has a poor prognosis as compared to transient abnormal myelopoiesis that usually affect 10% of newborns associated with Down syndrome and may also go into spontaneous remission. The criteria for congenital leukemia diagnosis include (1) disease presentation at or shortly after birth (30 days), (2) increased immature WBC's, (3) infiltration of cells into extra hemopoietic tissues, (4) absence of any condition causing leukemoid reaction mimicking CL.^{1,4,5} Here we present a case of acute congenital myeloid leukemia in a newborn who initially misdiagnosed as a case of sepsis based on clinical features and high white

cell count.

Case Report:

A 1-day old female neonate was admitted with the complaints of fever, increasing lethargy and poor suck. She was a term neonate (birth weight 3.0kg) born by normal vaginal delivery to an eighteen-year-old mother and was a first child of non-consanguineous parents. The mother had regular prenatal care with no history of antenatal medical illness. On examination, the baby was lethargic and febrile. She had pallor, but had no dysmorphic facies or findings that could suggest Down's syndrome. She was tachypneic (respiratory rate - 76/min) having heart rate of 186/min. The anterior fontanelle was at level. The abdomen was mildly distended and liver and spleen were palpable (2cm and 1cm respectively) below the costal margins. No skin lesions were present. Other systems were clinically intact.

The baby was evaluated for early neonatal sepsis, which revealed a Hb of 7.6g/dL, TLC 37.7 x 10³/μL and

platelet count of $129 \times 10^3/\mu\text{L}$. The peripheral smear showed 33% neutrophils, 26% lymphocytes, 9% monocytes, 2% eosinophils, 10% bands and metamyelocytes and 20% atypical cells [Figure 1, marked as 1 and 2]. Immunophenotyping revealed the blasts to be positive for CD45, CD13, CD33, CD117, CD34, HLA-DR and negative for B and T lymphoid markers. Karyotyping was done which showed normal 46 XX pattern. The final diagnosis was acute myeloid leukemia. C reactive protein (CRP) was 2.0 mg/l, blood group A positive. IgM levels for congenital TORCH {Toxoplasmosis, Other (syphilis, varicella-zoster, parvovirus B19), Rubella, Cytomegalovirus (CMV), and Herpes infections} infections were negative and blood culture was sterile after 48hrs. The mother's blood group A RhD positive, whereas child's blood group was O RhD positive VDRL negative. The neonate was given supportive treatment in the form of IV fluids and IV antibiotics. Unfortunately, the baby died on the Fourth day of her birth.

Conclusion:

Congenital acute leukemia although very rare but can present in neonates with normal karyotype and prompt peripheral blood film review can easily differentiate it from sepsis and make diagnosis earlier.

Conflict of Interest: Authors declare no conflict of interest.

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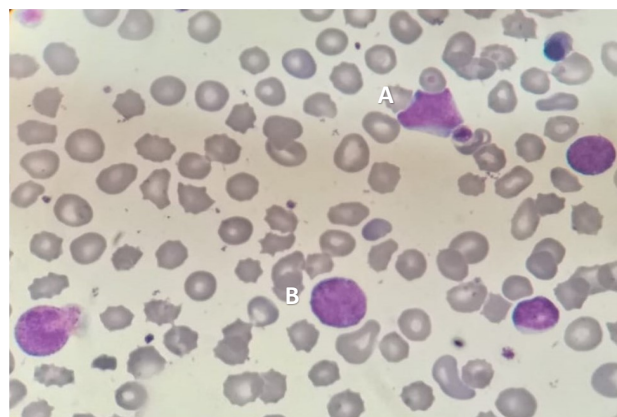


Figure1: showing presence of immature cells (A& B)