

Hemolytic Anemia in a Newborn: Thinking About Infantile Pyknocytosis

Yenidoğanda Hemolitik Anemi: Infantil Piknositozu Düşünmek

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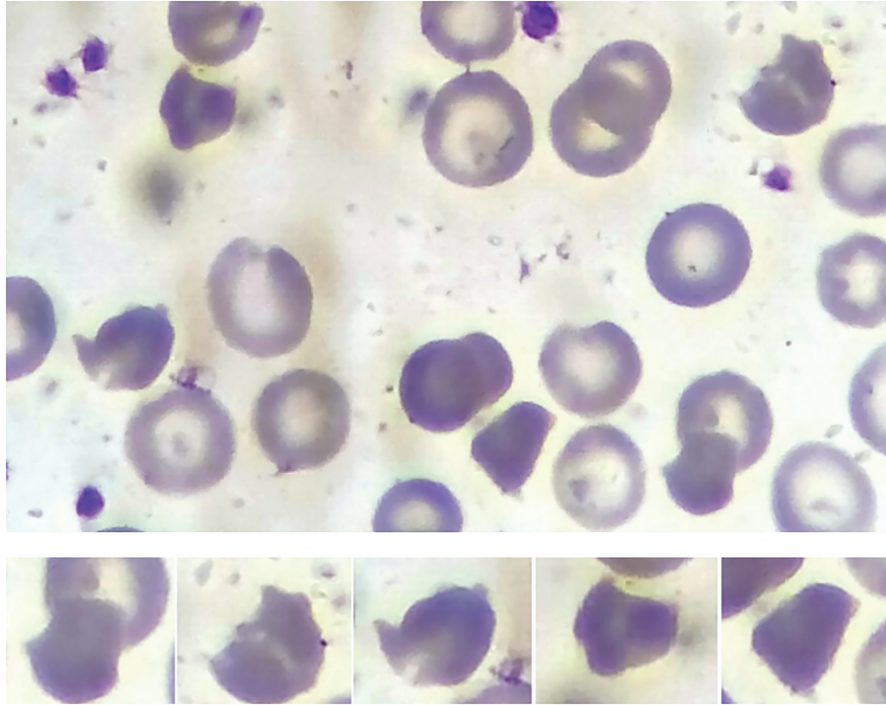


Figure 1. Peripheral blood smear showing anisocytosis and poikilocytosis with distinctive abnormalities including numerous pyknocytes, polychromasia, fragmented red cells, and microspherocytes.

A female newborn presented at 24 days of life with jaundice and pallor. She was born at 36+2 weeks of gestation by cesarean incision. Her mother was a healthy 32-year-old woman with blood group O+. The parents were not consanguineous and there was no particular family history.

On the seventh day of life, the patient had developed jaundice, which worsened gradually, and on day 24, she was referred to our department for prolonged jaundice.



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On admission, the clinical examination revealed cutaneous-conjunctival jaundice and skin pallor. No hepatomegaly or splenomegaly was palpated. A complete blood count was performed and showed normal leukocyte and platelet counts but highly regenerative macrocytic anemia with hemoglobin of 6.5 g/dL, mean corpuscular volume of 101 fL, and reticulocyte percentage of 20% (absolute reticulocyte count of 450,000/ μ L). Unconjugated hyperbilirubinemia of 46 mg/L was also noted.

Infection screening was negative and hemolytic anemia was diagnosed. The infant's blood type was O+ and the direct Coombs test was negative, ruling out fetal-maternal alloimmunization. Surprisingly, the blood smear revealed anisocytosis and poikilocytosis with specific findings including pyknocytes, polychromasia, fragmented red cells, and microspherocytes (Figure 1).

Various causes of hemolytic anemia were investigated. Hemolytic uremic syndrome was ruled out following confirmation of normal renal function and platelet count. Erythrocyte enzyme assays (glucose-6-phosphate dehydrogenase and pyruvate kinase) and hemoglobin electrophoresis results were normal. Similarly, the eosin-5'-maleimide-binding test ruled out spherocytosis.

The diagnosis of infantile pyknocytosis (IP) was suggested. The blood smear was consistent with this diagnosis, showing pyknocytes at rates greater than 3%. The patient received one red blood cell transfusion. Three months later, her hemoglobin level remained stable at 10.8 g/dL. The diagnosis of IP was retained retrospectively.

IP is a rare cause of hemolytic anemia in newborns; a limited number of case reports and case studies have been published [1,2,3,4,5,6]. The physiopathology of IP remains unclear, but potential contributions include defects in erythrocyte membrane production, altered red blood cell metabolism, and oxidative stress, as suggested by the presence of pyknocytes in glucose-6-phosphate dehydrogenase deficiency (G6PD) [7]. Currently, IP remains a diagnosis of exclusion. The diagnosis is based on cytology that shows numerous pyknocytes and the exclusion of classic etiologies, especially ABO incompatibility and G6PD deficiency.

Keywords: Infantile pyknocytosis, Blood smear, Hemolytic anemia, Newborn

Anahtar Sözcükler: İnfantil piknositoz, Periferik yayma, Hemolitik anemi, Yenidoğan

Ethics

Informed Consent: Written informed consent was obtained from the patient's parents for the publication of any potentially identifiable images or data included in this article.

Footnotes

Authorship Contributions

Concept: I.M., I.J., F.C., T.K.; Design: I.M., I.J., F.C., T.K.; Data Collection or Processing: I.M., F.C., I.K., N.L., T.K.; Analysis or Interpretation: I.J., I.K., N.L.; Literature Search: I.M., I.J., F.C., I.K., T.K.; Writing: I.M., I.J.

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