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Clinical and laboratory characteristics of alloimmune neonatal neutropenia in Croatian Institute of Transfusion Medicine in the period from 1998 to 2015

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Background: Alloimmune neonatal neutropenia (ANN) is the result of maternal alloimmunization during pregnancy to fetal neutrophil antigens inherited from the father. In most cases, ANN develops consequently to alloimmunization to the specific human neutrophil antigens HNA-1a and HNA-1b, less frequently HNA-2a, and to the neutrophil Fc gamma receptor IIIB (CD16). The clinical course of the disease is self-limiting, with a mean duration of 7 weeks. Generally, only mild bacterial infections are recorded, however, lethal outcome may occur in the severe forms of the disease associated with sepsis. The treatment usually includes antibiotics, intravenous (IV) gamma globulins, and recombinant human granulocyte colony-stimulating factor (hr G-CSF); however, with variable success.

Aim: The aim of this study was to analyze laboratory and clinical data of 36 newborns undergoing serologic testing for alloimmune neonatal neutropenia (ANN) during the 1998-2015 period in Croatian Institute of Transfusion Medicine (CITM).

Results: The average absolute neutrophil count in newborn blood at birth was 750/mm³ (min.115 and max.1470) and duration of neutropenia 6.5 weeks. Eleven (11) of 25 neonates did not receive any treatment and there were no signs of bacterial infection. Other were treated with antibiotics only and antibiotics and intravenous gamma globulins or granulocyte growth factor. Seven (7) of 25 newborns had mild bacterial infection (omphalitis) and 6 had severe respiratory infection and threatening sepsis. All of them reached full recovery. There was no fatal disease.

Conclusion: ANN is a rare but potentially life-threatening disorder. Serologic testing for ANN in case of isolated neutropenia in the newborn contributed considerably to timely detection of ANN.

Biography

Maja Tomicic is serving as the Head of Department for Platelet and Leukocyte Diagnostics and Hemostaseology, and Education Department at Croatian Institute of Transfusion Medicine (CITM) from 1992. She is Scientific Assistant at University of Zagreb Medical School from 2012. As a Head of Department her responsibilities include development and introduction of methods for platelet and leukocyte immunogenetic and haemostasis testing for outpatients, blood products quality control hemostasis testing, and investigation of transfusion associated acute lung injury, post transfusion purpura, fetal and neonatal alloimmune thrombocytopenia and neutropenia. Her MS thesis was on the topic "Frequency and Significance of Anti-Platelet Antibodies in Pregnant Women and Hematology Patients" and PhD thesis on the topic "Serological, Molecular and Clinic Characteristics of Alloimmune Neonatal Neutropenia". She has published 27 papers; 18/24 cities in CC, 59 congress abstracts, 22/59 in CC Journals, and 37/59 in "Index Medicus" Journals.

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