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CHIMERISM MONITORING OF PEDIATRIC ONCOLOGY PATIENTS AFTER HEMATOPOIETIC STEM CELL TRANSPLANTATION USING STR ANALYSIS

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Hematopoietic stem cell transplantation (HSCT) is becoming an increasingly important approach to treatment children and adults with different malignant and nonmalignant diseases. Donor chimerism analysis has become a routine method for the following the newly developed hematopoietic system is of recipient or donor origin. This study aimed to evaluate the donor chimerism status using polymerase chain reaction (PCR) of short tandem repeat (STR) in pediatric patients with different malignant and nonmalignant diseases. Our study includes 96 children with malignant and nonmalignant disorders. Twenty-six were malignant (ALL, AML, KML) and 70 were nonmalignant (thalassemia, sickle cell disease, immunodeficiency diseases, osteopetrosis, severe aplastic anemia, etc.) Consent form was taken from the patients. The patients underwent transplantation at Balcalı Hospital Bone Marrow Transplant Clinic. Sixteen short tandem repeat alleles of donor and recipients were analyzed. STR-based analyses were used before HSCT to determine the informative alleles and after for monitoring post-transplant chimerism. The patients with malignant disorders (26), who underwent HSCT, post-transplant (30th day and 60th day period) monitoring results were 46% complete donor chimerism, 19% mix chimerism and 15% graft rejection or non-engraftment. The patients with nonmalignant disorders (70) chimeric status were 59% complete donor chimerism, 19% mix chimerism and 14% graft rejection or non-engraftment. Quantitative monitoring of recipient and donor-derived cells by molecular methods has become an indispensable diagnostic tool in the surveillance of patients undergoing allogeneic HSCT. Our analysis of patient/donor cell chimerism during the post-transplant period reveals donor and recipient information for preemptive therapeutic interventions for clinicians. Using STR–PCR-based serial analysis of microsatellite regions in short time intervals, it could be shown that patients with rapidly increasing mixed chimerism have the highest risk of relapse.

Biography

Ebru Dündar Yenilmez is an Assistant Lecturer and Specialist of Medical Biochemistry, General Manager Assistant of the Prenatal Diagnosis Laboratory of the Department. She is a Member of Turkish Biochemistry Society, International Federation of Clinical Chemistry (IFCC) and European Society of Human Genetic (ESHG). She got her BSc in Biology, MSc in Medical Biochemistry, Specialist in Medical Biochemistry and PhD at Medicine Faculty of Cukurova University. Her researches focus on the molecular basis of the inherited blood disorders (Thalassemias, sickle cell anemia), cystic fibrosis, hemophilia's, congenital adrenal hyperplasia etc., gene expression, donor chimerism monitoring of pediatric hematology/oncology patients. Now she is a specialist of the Prenatal Diagnosis Laboratory of Hemoglobinopathies .

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