Reduced-intensity conditioning and umbilical cord blood transplantation in children. Experience of a Pediatric Hospital in Colombia.

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Abstract

Umbilical cord blood (UCB) has been shown to contain sufficient progenitor cells to provide durable engraftment in children, and it provides an alternative stem cell source for patients without related matched or unrelated donors. We describe the preliminary results of a cohort of 20 pediatric patients with a median age of 9 years (range 3-18) with hematologic malignancies undergoing to a unrelated umbilical cord blood transplant with a reduced-intensity conditioning regimen of fludarabine, melphalan, and rabbit antithymocyte globulin.

UCB units were obtained from REDMO Spain. UBC units had an average of 7.0 (range 2.6 - 12.25) total nucleated cells/kg recipient. UCB units were required to be a 4/6 HLA-A, -B, and -DR match with the patient. These antigens were identified by intermediate-resolution (HLA class I) and high-resolution DNA typing (HLA class II). All patients were isolated in HEPA filters rooms. They received supportive care with transfusion support; prophylactic antibacterial, antifungal, antiviral, and antineuromyocystis therapy; and filgrastim 5 μg/kg/day from day +1 until the neutrophil engraftment (defined as the first of 3 consecutive days with neutrophil recovery to at least 0.5 × 10e9 cells/L). Platelet engraftment was defined as the first day of an unsupported platelet count > 20 ×10e9 cells/L within 7 days.

Conclusions

Our findings support the use of reduced-intensity regimen in pediatric patients with hematologic malignancies; however, the incidence of acute GVHD is a little bit higher than the ones reported in other series; as a consequence, a better strategy for prophylaxis against acute GVHD should be implemented.

In this preliminary report we report an acceptable TRM and DFS using a reduced-intensity regimen followed by UBC transplantation suggesting a significant preservation of the graft-versus-leukemia effect after UBC transplantation.

Objectives

The aim of this retrospective study was to analyze the outcome of children with hematologic malignancies without a suitable matched related donors after an unrelated umbilical cord blood transplant with a reduced-intensity conditioning regimen between July 2012 and October 2013.

Methods

All patients in this cohort were underwent to an unrelated umbilical cord blood transplant for acute leukemia in second or subsequent complete remission or in first remission with high-risk criteria. We used a reduced-intensity conditioning regimen including fludarabine 30 mg/m2/day on days -8 through -3, melphalan 100 mg/m2/day on day -2, and rabbit antithymocyte globulin 1.5 mg/kg/day on days -7, -5, -3, and -1. GVHD prophylaxis consisted of intravenous cyclosporine starting on day -3 and mycophenolate mofetil (MMF) 15 mg/kg orally twice daily starting on day +1. Stem cells were infused on day 0.

Results

Twelve patients (60%) received 1 4/6 matched UBC unit, seven patients (35%) received 1 5/6 matched UBC unit one patient (5%) received 2 4/6 matched UCB units.

All patients achieved hematologic recovery, the median time to a neutrophil engraftment was 20 days, and the median time to an unsupported platelet count > 20 ×10e9/L was 32 days. Acute graft-versus-host disease (GVHD) grade III-IV occurred in 35% of patients. The 100-day TRM was 18%, and the 1-year disease-free survival was 58%.

References