The impact of reduced dose of posttransplant cyclophosphamide on RIC based HLA-haploidentical PBSCT

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HLA-haploidentical stem cell transplantation using posttransplant cyclophosphamide (PTCy) ensures good graft-versus-host disease (GVHD) controls and low non-relapse mortality (NRM). However, there is little known about the optimal dose of PTCy. We conducted a prospective, multicenter, phase II study to evaluate the impact of dose reduction of PTCy on HLA-haploidentical peripheral blood stem cell transplantation after reduced-intensity conditioning (Haplo16 RIC study). Conditioning regimen was fludarabine, busulfan, and TBI. GVHD prophylaxis consisted of PTCy (40 mg/kg on days 3 and 4) and tacrolimus plus mycophenolate mofetil. Fifty-seven patients with a median age of 61 were enrolled in this study. The incidence of grade III-IV acute GVHD (the primary endpoint) was 5.3% (1.4-13.3). Neutrophil engraftment was achieved in 97% of the patients. The incidences of grade II-IV acute GVHD and chronic GVHD were 26% and 36%, respectively. Overall survival (OS), disease-free survival (DFS), relapse rate, and NRM were 69%, 52%, 34%, and 14%, respectively. In our previous study (Haplo14 RIC study: the dose of PTCy was 50 mg/kg on days 3 and 4), the incidences of grade II-IV, III-IV acute GVHD, and chronic GVHD were 14%, 5%, and 23%, respectively. OS, DFS, relapse rate, and NRM were 52%, 43%, 39%, and 18%, respectively. Our results clearly showed that the reduction of PTCy did not increase the incidence of grade III-IV acute GVHD, and suggest that the reduction of PTCy may be an option to improve survival in HLA-haploidentical transplantation after reduced-intensity conditioning.