

Infections in patients with cancer and/or stem cell transplantation

Infectious complications following allogeneic stem cell transplantation by using antithymocyte globulin-based myeloablative conditioning regimens in children with haemoglobinopathies

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Introduction

Antithymocyte globulin (ATG) has been used to prevent graft failure/rejection in the setting of allogeneic stem cell transplantation (allo-SCT) for hemoglobinopathies. The addition of ATG in conditioning regimens has been associated with delayed immune reconstitution and consequently with increased infection rates; however, relevant data are scarce and inconsistent. The objectives of this study were to describe the rates and patterns of infections complicating allogeneic myelo-ablative SCT with ATG-based conditioning regimens, in a homogenous cohort of children with hemoglobinopathies.

Methods

This is a retrospective study on the epidemiology of bacterial, fungal, viral and parasitic infections in a cohort of 105 children and adolescents with β -thalassemia (n= 100) or sickle cell disease (n=5) who underwent allo-SCT using HLA-identical sibling (n=96) or HLA-compatible unrelated donors (n=9), in a single institution, during the period of November 1995 until June 2013. All patients received an ATG-based conditioning regimen.

Results

With a median follow up period of 10 years (range 1-18 years) 101 out of 105 patients are alive while 96 out of 105 are alive without evidence of primary disease. Ninety nine achieved sustained donor cell engraftment while the median time to neutrophil recovery was 18 days (range 12-40 days), and the median time to platelet recovery was 34 days (range 10-60 days). Graft failure/rejection occurred in 5 patients. Thirty two patients (30.5%) experienced grade II-IV acute GVHD while 8 patients (7.6%) had chronic GVHD. The most common infections were viral, especially CMV infection. The cumulative incidence of CMV-viremia was 45.7% (95% CI 33-55%), developing at a median of 48 (range 12-142) days without evidence of overt CMV disease. Herpes zoster developed in 8 patients at a median of 12 months post-transplant, while 10 patients presented with late-onset hemorrhagic cystitis at a median of 35 days post-transplant; six of them had at least 1 positive sample for polyoma (BK) viruria tested with PCR for BKV DNA. The cumulative incidence of bacteremia was 17.1% (95% CI 10.6-25%), occurring at a median of 74 (range 24-110) days. No patient developed probable or definite invasive fungal infection. Four deaths were recorded; 2 of them were attributed to infections (toxoplasmosis and *Pneumocystis jiroveci* pneumonia respectively).

Conclusion

The use of ATG-containing conditioning regimens for allo-SCT, in pediatric patients with hemoglobinopathies is not associated with increased risk of infections compared to that reported in studies using of non-ATG containing regimens. Impressively, no invasive fungal infections were recorded. Our data suggest that the beneficial effect of ATG on engraftment and GVHD is not compromised by an increased rate of infections.