The Efficacy of Anti-Thymocyte Globulin for in Vivo T Cell Depletion in Conditioning in Patients With Acute Myeloid Leukemia Undergoing Allogeneic Hematopoietic Stem Cell Transplantation From Related and Unrelated Donors

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Introduction

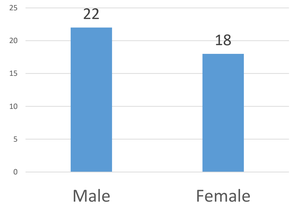
Allogeneic hematopoietic stem cell transplant (HSCT), is the treatment with the biggest curative potential in patients with AML. Up to 70% of patients undergoing allogeneic HSCT will suffer graft versus host disease (GvHD) to some extent, significantly contributing to the mortality rates. One possibility for GvHD prophylaxis is in vivo T cell depletion with anti-thymocyte globulin (ATG) during conditioning. The major drawback is the fear of increased rates of infections and worsened relapse rates

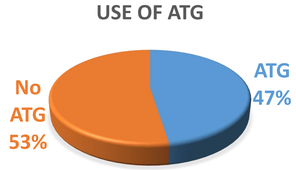
Methods

We analyzed 40 patients with AML in the period of 2014 to 2021. All underwent allogeneic HSCT from related or unrelated donors. ATG -thymoglobuline at a dose of 5 to 10 mg/kg was administered on days -3-2-1 before transplant. We made a comparative analysis of the GvHD rates, infectious rates and relapse rates in patients with and without ATG in conditioning

Results

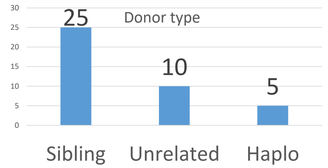
Of the analyzed group, 18 (45%) were females and 22 (55%) were men. ATG was added to the conditioning regimen in 47% (19) of patients.

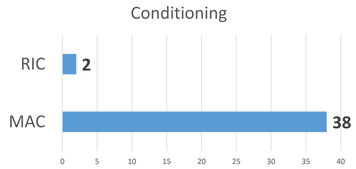




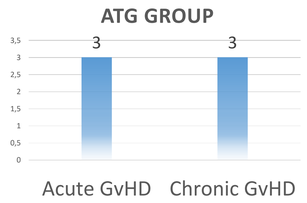
The median age of the patients in years was 40.9, ranging from 16 years as our youngest patient to 65 years, being our oldest patient. The median time to performing allogeneic PBSCT was 6.6 months. All of our patients received hematopoietic stem cells from peripheral blood (PBSC).

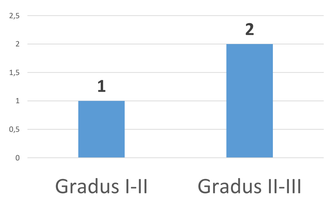
In our group of patients, we have used sibling donors in 25 (62.5%) of them, unrelated donors in 10, and haploidentical donors in 5 patients. As far as the conditioning, we used myeloablative conditioning (MAC) in almost all patients. Only in 2 patients we used reduced intensity conditioning



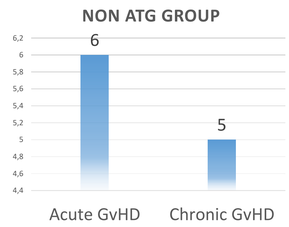


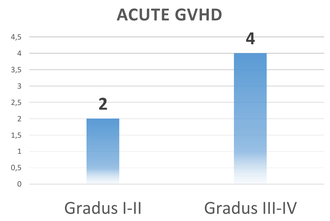
In the ATG group in 3 patients (15.8%) acute GvHD was diagnosed, and also 3 patients (15.8%) were diagnosed with chronic GvHD. 1 Patient had acute GvHD gradus I-II, and 2 patients (10%) acute GvHD gradus III-IV



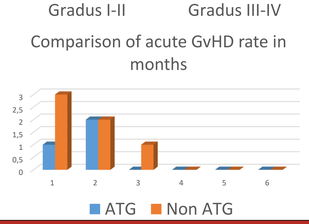


In the Non ATG group in 6 patients (29%) acute GvHD was diagnosed, and 5 patients (24%) were diagnosed with chronic GvHD. 2 Patients had acute GvHD gradus I-II, and 4 patients (19%) acute GvHD gradus III-IV.

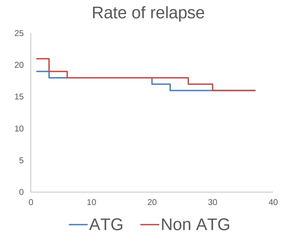


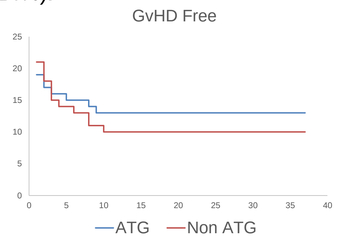


Comparison of acute and chronic GvHD rates in months after allogeneic HSCT shows the advantage that the ATG group has.

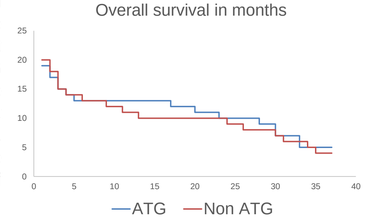


The main ,,fear,, of using ATG in conditioning in patients with AML is the reduction of the graft versus leukemia effect resulting in bigger relapse rates, and the increased rates of fatal infections.In the ATG group in 3 patients (15.7%) relapse was confirmed, whereas in the non ATG group in 4 patients (19%). If we analyse the infections, in the ATG group in 5 patients (26%), serious infections were diagnosed, while in the non ATG group in 3 patients (14%).





If we compare the Overall survival in these 2 group of patients, we will see that the in the ATG group, the OS is not inferior compared with the non ATG group. Concerning the relapse rate, we can see that there is no significant difference in these 2 groups of patients. But, regarding the rates of GvHD the ATG group had lower rates of diagnosed GvHD



Conclusions

Using ATG in conditioning for patients with AML undergoing allogeneic HSCT as a method of in vivo T cell depletion represents a justified and save therapeutic method resulting in lower rates of GvHD, better quality of life, not worsening relapse rates and the therapeutic potential of allogeneic HSCT. This method of in vivo T cell depletion is a justified therapeutic approach contributing to treatment benefits to the patients undergoing allogeneic HSCT

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