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Cost Minimization Study on ATG-Fresenius for prevention of Graft Versus Host Disease

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Objectivos (Objectives): To assess the economic advantages of using ATG-Fresenius in combination with standard medication for prevention of Graft Versus Host Disease (GVHD) in patients with malignant blood diseases prior to hematopoietic stem cell transplantation (HSCT) with myeloablative conditioning regimen.

Metodologia (Methodology): The clinical trial evaluating the effects of preventive use of ATG-Fresenius in HSCT subjects shows that this drug is associated with a significantly reduced incidence of acute and chronic GVHD. Patients without GVHD have significantly better quality of life. In addition, treatment with ATG-Fresenius did not lead to statistically significant differences in survival in the first two years after HSCT. Therefore a cost minimization analysis was performed. Prophylaxis with methotrexate and cyclosporine and its combination with ATG-Fresenius are compared for a time horizon of 24 months. The method employed for the economic assessment study is a decision tree divided into two time periods: 1) the first 100 days, in which acute GVHD can occur; and 2) between the hundredth day after transplantation and the end of the 24-months period (during which the vast majority of chronic GVHD can occur). Resources consumed due to GVHD prophylaxis, infections, and acute GVHD cases were measured in a piggy-back study that ran in parallel with the clinical trial in 5 German university hospitals. However, as this piggy-back study did not collect outpatient consumption of the resources used in patients with extensive chronic GVHD, cases are based on the practice at IPOLFG, as reported by the Director of the relevant service. Unit costs were collected from official Portuguese sources.

Resultados (Results): The use of ATG-Fresenius prior to the transplant implies drug costs of 10.080€ per patient. Post-transplant GVHD prophylaxis was found to be less intensive for patients that had taken ATG-Fresenius. The costs for post-transplant prophylaxis were reduced by 2.160€ per patient. Inversely, costs per infection were 5.400€ higher in the ATG group. The costs for acute GVHD were measured separately for each severity grade, with total mean costs of 378€ (grade 1), 90€ (grade 2), 8.003€ (grade 3) and 18.633€ (grade 4). The total mean costs for chronic extensive GVHD cases were 35.594€ during the first year and 16.752€ during the second. The total mean cost for the entire 24-months period for patients treated with ATG-Fresenius was 35.945€. As the total mean cost per patient on standard care was 37.785€, ATG-Fresenius is a cost-saving alternative. In fact, it allows a saving of 1.840€ per patient. The clinical trial shows that prophylaxis with ATG-Fresenius also leads to a significant decrease in GVHD incidence and a reduced need for immunosuppressive therapy. Since the reduced incidence of GVHD implies a positive long-term impact on quality of life, it may be concluded that ATG-Fresenius prophylaxis is a dominant alternative. The results were confirmed by a sensitivity analysis assessing the impact of the most important factors: different cost of prophylaxis post-transplant and of infections according to treatment group; average weight; mean cost per event, focusing on chronic GVHD costs; and incidence rates of chronic extensive GVHD.

Conclusões (Conclusions): There is an economic advantage of using ATG-Fresenius for prevention of GVHD in patients with malignant blood diseases, prior to HSCT with MAC. Although it was not possible to establish statistically significant gains in terms of survival in the first two years after transplantation, the drug in question was shown to significantly reduce the incidence of acute and chronic GVHD, which is unequivocally associated with an enhanced quality of life. Moreover, this study showed that, within a time horizon of 2 years, ATG-Fresenius reduces costs to the National Health Service and is thus a dominant alternative. The sensitivity analysis performed also shows that the conclusion reached is robust.