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Retrospective Study **Published Date:- 2024-12-03**

Impact of Intravenous Busulfan Pharmacokinetics on Safety in Pediatric Patients who have undergone Hematopoietic Stem Cell Transplant

Introduction: Busulfan (Bu)-based regimens are crucial for myeloablative conditioning in pediatric allogeneic stem cell transplantation. Despite its efficacy, Intravenous Bu has a narrow therapeutic index and variable pharmacodynamics especially in children, heightening the risk of adverse events. This study explores Bu dosing and related organ toxicities in pediatric patients at a tertiary center in Saudi Arabia.
Methodology: This retrospective study at King Fahad Specialist Hospital in Dammam (KFSH-D), Saudi Arabia, included pediatric patients (?16 years) treated with intravenous Bu before bone marrow transplantation from 2010 to 2022. Pharmacokinetic dose adjustments were based on AUC targets of 900-1350 µMol-min. Descriptive measures included mean, Standard Deviation (SD), median, minimum-maximum values, counts, and percentages. Statistical analyses used Kruskal-Wallis, Chi-square, and Fisher's exact tests. Ethical approval was obtained from KFSH-D.
Results: We identified 44 pediatric patients who underwent Bu prior to HSCT. Mean age was 4.95 ± 2.49 years, with a female majority (56.8%). Primary diseases included Beta Thalassemia (34.09%), Neuroblastoma (29.55%) among others. There was no significant difference in the cohort's demographic and clinical features of the cohort. Nonetheless, higher infections were found in the Low-AUC group (66.7%) compared to the Target-AUC (40.0%) and Higher-AUC groups (0.0%) ($p = 0.015$).
Conclusion: This study emphasizes the need for therapeutic drug monitoring and individualized Bu dosing in pediatric HSCT to minimize toxicity and improve outcomes. Larger multicenter studies are recommended to refine dosing strategies and enhance the safety and efficacy of Bu-based regimens.

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B-ultrasound-guided Intrahepatic Infusion of Autologous Bone Marrow Cells for Decompensated Cirrhosis

Objective: To study the therapeutic effect of B-ultrasound-guided intrahepatic infusion of autologous bone marrow nucleated cells on decompensated cirrhosis.
Methods: To observe the clinical treatment of 75 cases of decompensated cirrhosis. Among them, 30 cases received routine liver protection and diuretic treatment. 45 cases were treated by percutaneous transhepatic infusion of autologous bone marrow nucleated cells under the guidance of B ultrasound. There were no significant differences in liver function and blood routine indexes between the two groups before treatment ($p > 0.05$).
Results: The indexes of liver function and blood routine at different time periods of 1 month, 3 months, 6 months, and 12 months in the conventional treatment group did not change significantly. 6 cases died of liver failure within 1 year, the fatality rate was 20%. The indexes of liver function and blood routine of percutaneous liver transhepatic infusion of autologous bone marrow nucleated cells at 1 month, 3 months, 6 months, and 12 months under the guidance of B-ultrasound were significantly better than those of the conventional treatment group ($p < 0.05$). One case died of gastrointestinal bleeding in the group of percutaneous transhepatic infusion of autologous bone marrow nucleated cells guided by B ultrasound, with a fatality rate of 2.5%. Compared with the conventional treatment group, there were significant differences ($p < 0.05$).
Conclusion: Conventional drug therapy has no obvious effect on decompensated cirrhosis. Intrahepatic infusion of bone marrow nucleated cells can significantly promote liver function reconstruction in decompensated cirrhosis.
