Abstract

Background: Tacrolimus is converted from intravenous to oral formulation for the prophylaxis of graft-versus-host disease (GVHD) when patients can tolerate oral intake and GVHD is under control. Oral tacrolimus formulation presents poor bioavailability with intra- and inter-individual variations; however, some factors affecting its blood concentration among pediatric hematopoietic stem cell transplantation (HCT) recipients are still unclear. This study aimed to identify the clinical factors affecting tacrolimus blood concentrations after switching its formulation. **Methods**: Changes in blood concentration/dose ratio (C/D) of tacrolimus in pediatric HCT recipients were analyzed following the switching of tacrolimus from intravenous to oral formulation. Clinical records of 57 pediatric patients who underwent allogenic HCT from January 2006 to April 2019 in our institute were retrospectively reviewed. The C/D of tacrolimus before discontinuation of intravenous infusion (C/Div) was compared with the tacrolimus trough level within 10 days after the initiation of oral administration (C/Dpo). Multiple linear regression analysis was performed to identify factors affecting (C/Dpo)/(C/Div). **Results:** The constant coefficient of (C/Dpo)/(C/Div) was 0.1692 (95% confidence interval: 0.137–0.2011). The concomitant use of voriconazole or itraconazole and female sex were significant variables with a beta coefficient of 0.0974 (95% confidence interval: 0.062–0.133) and -0.0373 (95% confidence interval: -0.072 to -0.002), respectively. **Conclusions:** After switching of tacrolimus formulation, pediatric HCT recipients might need oral tacrolimus dose that is 5–6 and 3.5–4.5 times the intravenous dose to maintain tacrolimus blood concentrations and area under the concentration–time curve, respectively. With the concomitant use of voriconazole or itraconazole, an oral tacrolimus dose of 4–5 times the intravenous dose seemed appropriate to maintain blood tacrolimus concentration.