Evaluation of defibrotide use in an academic pediatric institution

Purpose: Sinusoidal obstructive syndrome (SOS) is a severe complication of blood and marrow transplantation. Until recently, there was no definitive treatment for SOS, only supportive care options. Defibrotide was FDA-approved for the treatment of SOS in March 2016. There are currently two different diagnostic criteria for SOS in adults (the Baltimore and Seattle criteria) and none specifically for pediatric patients, although there are proposed criteria that have not yet been validated. This is a medication use evaluation to determine the diagnostic criteria being used to initiate defibrotide for sinusoidal obstructive syndrome in an academic pediatric institution.

Methods: This single-center, retrospective study has been submitted and approved by the Institutional Review Board. A data query created a list of all patients with a defibrotide order on their electronic health record between April 1, 2016 and September 30, 2019. The following data was collected: demographic data; initial diagnosis for transplant and conditioning regimen; defibrotide order, previous and concomitant hepatotoxins, prophylactic medications for sinusoidal obstructive syndrome, and diuretics; any transfusions, daily weight, oxygen requirement, platelets, bilirubin, abdominal circumference, BUN, and serum creatinine; and ultrasound readings of retrograde flow, ascites, and hepatomegaly. This information about the patient, specific diagnostic criteria, and risk factors for sinusoidal obstructive syndrome was analyzed to assess how effectively defibrotide is being utilized in a pediatric population.

Results: Fourteen patients were included. Eleven patients were diagnosed with SOS and three received defibrotide prophylactically. All eleven patients diagnosed with SOS had received myeloablative conditioning prior to blood and marrow transplantation. The median time to defibrotide initiation was 16 days and the median duration of treatment was 20.5 days. Of the eleven patients diagnosed with SOS, all met the proposed pediatric criteria from the European Society of Bone and Marrow Transplantation (EBMT). Ten and three patients met each of the adult criteria, respectively. Patient outcomes were primarily positive, with 64.5% of patients completing a full 21-day course of defibrotide treatment without any adverse events. Bleeding led to discontinuation in 21.5% of cases and one patient did not survive the treatment.

Conclusion: Not all SOS diagnostic criteria can be applied equally within a pediatric population. Pediatric specific criteria proposed by the EBMT accurately diagnosed the highest proportion of patients being treated for SOS. Further prospective research studies are warranted to test the sensitivity and specificity of diagnostic criteria for SOS in a pediatric population as well as to determine specific risk criteria for the initiation of defibrotide prophylaxis.

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Until recently, there was no definitive treatment for SOS, only supportive care options until Defibrotide was FDA-approved for adults & children in March 2016

The goal of this MUE was to characterize the use of defibrotide at Children's Mercy, with an emphasis on the diagnostic criteria used

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