Mesenchymal stromal cells for treatment of steroid-refractory GvHD: a review of the literature and two pediatric cases.

Abstract:
Severe acute graft versus host disease (GvHD) is a life-threatening complication after allogeneic hematopoietic stem cell transplantation. Human mesenchymal stromal cells (MSCs) play an important role in endogenous tissue repair and possess strong immune-modulatory properties making them a promising tool for the treatment of steroid-refractory GvHD. To date, a few reports exist on the use of MSCs in treatment of GvHD in children indicating that children tend to respond better than adults, albeit with heterogeneous results. We here present a review of the literature and the clinical course of two instructive pediatric patients with acute steroid-refractory GvHD after haploidentical stem cell transplantation, which exemplify the beneficial effects of third-party transplanted MSCs in treatment of acute steroid-refractory GvHD. Moreover, we provide a meta-analysis of clinical studies addressing the outcome of patients with steroid-refractory GvHD and treatment with MSCs in adults and in children (n = 183; 122 adults, 61 children). Our meta-analysis demonstrates that the overall response-rate is high (73.8%) and confirms, for the first time, that children indeed respond better to treatment of GvHD with MSCs than adults (complete response 57.4% vs. 43.6%).
These data emphasize the significance of this therapeutic approach especially in children and indicate that future prospective studies are needed to assess the reasons for the observed differential response-rates in pediatric and adult patients.