During major ABO-mismatched bone marrow transplant (BMT), the infusion of incompatible red blood cells (RBCs) that are present in the bone marrow graft can cause adverse events from hemolysis. RBC depletion of the bone marrow graft can decrease this risk, but the optimal method to prevent hemolysis is unclear” Nickel et al (2017).

Abstract:

Background: During major ABO-mismatched bone marrow transplant (BMT), the infusion of incompatible red blood cells (RBCs) that are present in the bone marrow graft can cause adverse events from hemolysis. RBC depletion of the bone marrow graft can decrease this risk, but the optimal method to prevent hemolysis is unclear.

Procedure: We conducted a retrospective cohort study of patients who underwent major ABO-mismatched BMT at a pediatric center and had RBC depletion with either hydroxyethyl starch (HES) sedimentation or Ficoll density gradient separation. Postinfusion hemoglobinuria and creatinine values were compared.

Results: Between 2002 and 2016, 37 patients received HES-treated and 16 patients received Ficoll-treated major ABO-mismatched bone marrow grafts. The median residual volume of RBCs was significantly greater with HES-treated grafts (HES 21.0 ml vs. Ficoll 1.4 ml, P < 0.0001). Patients who received HES-treated grafts had a higher prevalence of postinfusion hemoglobinuria (HES 57% vs. Ficoll 6%, P = 0.0009), but renal impairment was rare. Considering only HES-treated grafts, the volume of RBCs was not associated with either postinfusion hemoglobinuria or a creatinine increase.

Conclusions: Ficoll density gradient separation achieves smaller RBC volumes and less postinfusion hemoglobinuria than HES sedimentation, but both can prevent significant...
Infusion hemolysis after pediatric major ABO-mismatched bone marrow transplant

Further studies are needed to determine the residual incompatible RBC volume threshold in major ABO-mismatched BMT.

Reference:


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