The irradiation of red blood cells (RBCs) causes damage of the RBC membrane with increased potassium (K) leak during storage compared with nonirradiated RBC units of similar age” Cid et al (2016).

Abstract:

BACKGROUND: The irradiation of red blood cells (RBCs) causes damage of the RBC membrane with increased potassium (K) leak during storage compared with nonirradiated RBC units of similar age. A previous in vitro study showed a mean reduction of K of 94 ± 5% with a potassium adsorption filter (PAF).

STUDY DESIGN AND METHODS: A prospective, single-center, nonblinded, randomized controlled trial (RCT) was designed to evaluate the safety and efficacy of transfusing irradiated RBC units with the PAF. Patients 18 years of age or older who received irradiated RBC units due to chemotherapy-induced anemia were randomly assigned to receive irradiated RBC units with the PAF (PAF group) or with the standard blood infusion set (control group). Primary outcome measures were safety and efficacy of the PAF (absolute change in hemoglobin [Hb] and K, respectively, in patient’s blood values after transfusing the irradiated RBC units with or without the PAF).

RESULTS: A total of 63 irradiated RBC units were transfused to 17 patients in the control group, and a total of 56 irradiated RBC units were transfused to 13 patients in the PAF group. The absolute change of Hb (9.3 ± 6.3 g/L vs. 8.1 ± 5.8 g/L; p = 0.3) and the absolute change of K (-0.01 ± 0.4 mmol/L vs. -0.01 ± 0.3 mmol/L; p = 0.2) were comparable between the two groups of the trial.

CONCLUSION: The transfusion of 1 irradiated RBC unit with the PAF was as safe and efficacious as the transfusion of 1 irradiated RBC unit with the standard blood infusion set in
patients with chemotherapy-induced anemia.

Reference:


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