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Study of hematological and biochemical changes in stored blood

Apoorva Desai, Bhumi Agrawal, S G Chiplonkar and S C Patel
S.S.G. Hospital, India

Introduction: In blood transfusion medicine, red blood cells are the most frequently transfused blood components, world wide. The transfused red cells should have enough efficacies to perform its function. The goal of this study is to compare changes of various hematological and biochemical properties in stored blood.

Material and methods: Twenty five blood units of whole blood with CPDA (Citrate Phosphate Dextrose Adenine) and twenty five units of packed cells with CPD-SAGM (Saline, Adenine, Glucose, Mannitol), as anticoagulant, were examined. Various hematological parameters which were estimated are plasma hemoglobin, red blood cell count, haematocrit, mean corpuscular volume, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, plasma sodium level and plasma potassium level. These parameters were estimated weekly from each blood unit.

Results: There was rise in plasma hemoglobin, plasma potassium level and depletion of plasma sodium level. It was observed that rise of plasma hemoglobin and plasma potassium level was more elevated in CPDA bags as compared to CPD-SAGM bags. While plasma sodium level showed more reduction in CPDA bags as compared to CPD-SAGM bags.

Conclusions: Hematological and biochemical changes do occur in stored blood cells. Packed cells and whole blood units of CPD-SAGM showed less deterioration at the end of their life (after 42 days of collection date), as compared to the deterioration in CPDA packed cells and whole blood units at the end of their life (35 days). So, packed cells and whole blood units of CPD-SAGM units should be preferred over CPDA units for transfusion.

drapoorvadesai1990@gmail.com