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Study Title

Uninvited RBC companions - What else is in a leukocyte-reduced RBC bag?

Study Description

Whole blood-derived leukocyte-reduced RBC (LR-RBC) units contain additive solution and residual donor plasma. The type of additive solution and the concentration of residual plasma vary across blood collection centers and countries. For example, average residual plasma in LR-RBC bags produced by the buffy-coat method in Canada was 21.9 ml (about 5% of the product) compared with 8.5 ml in whole blood-filtration-derived RBC concentrates. Supernatants collected from cold stored LR-RBC bags are potentially immunogenic and may promote transfusion reactions in recipients. Clinically, transfused LR-RBC products from female donors have been associated with increased risk of mortality in male recipients. The cause for this phenomenon is not clear, and one possible explanation is allogeneic transfusion reactions related to residual plasma in RBC units from female donors with a history of pregnancy. Our recent BEST study (BEST #146, Quality assessment of red blood cell concentrates from teenage blood donors) has identified donor sex and age as significant modifiers of RBC units' proteome. Specifically,female sex was associated with increased expression of non-RBC proteins associated with cell-free hemoglobin degradation and detoxification (e.g., haptoglobin, hemopexin), immune response (immunoglobulins, complement system proteins), and fibrinogens.

Study Status

Active

Publication Number

Teams

CC

Study Leaders

Kanias