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Storage lesion: History and perspectives

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Abstract

Red blood cell concentrates (RBCCs) are the major labile blood component transfused worldwide to rescue severe anemia symptoms. RBCCs are frequently stored in additive solutions at 4°C for up to 42 days, which induces cellular lesion and alters RBC metabolism, protein content, and rheological properties. There exists a hot debate surrounding the impact of storage lesion, with some uncertainty regarding how RBCC age may impact transfusion-related adverse clinical outcomes. Several studies show a tendency for poorer outcomes to occur in patients receiving older blood products; however, no clear significant association has yet been demonstrated. Some age-related RBCC alterations prove reversible, while other changes are irreversible following protein oxidation. It is likely that any irreversible damage affects the blood component quality and thus the transfusion efficiency. The present paper aims to promote a better understanding of the occurrence of red blood cell storage lesion, with particular focus

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