Activated Platelet Transfusions Decrease Count Increment and Time to Next Transfusion for Hematology-Oncology Patients

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Introduction

• Patients who receive multiple platelet transfusions are at risk of infection, hemolytic and non-hemolytic reactions, and refractoriness
• Platelets have a short shelf life and are often in limited supply
• Patients should receive the fewest number of transfusions necessary to increase their platelets, benefiting patient outcomes and hospital costs
• Microparticles are formed during platelet activation and associated in malignancy, inflammation, infection, and coagulation
• ThromboLUX uses dynamic light scattering to determine microparticle content as a measure of platelet activation status
• The goal of this study was to investigate the effect of activated transfusions on count increment and time between transfusions for hematology/oncology patients following dynamic light scattering testing of platelet concentrates.

Methods

• Platelet units were screened for activation status using ThromboLUX and transfused within 30 hours
• Treating physicians were unaware of the study and activation status of each bag
• Chart review identified eligible hematology-oncology patients based on diagnosis and availability of transfusion data

Results

• 1296 tested platelet components transfused to 122 patients within 90-day study period
• 59 patients and 416 transfusions analyzed for count increment

Figure 1: Mean count increment before and after transfusion of activated platelets

• Statistically significant decrease of 8.9 hours (30.9% reduction) in time between transfusions after receipt of an activated transfusion

Limitations

• Inconsistent/insufficient documentation excluded portion of eligible patients
• Microparticle content only measure of platelet activation status
• No direct comparison to resting platelet transfusions

Conclusion

• Activated platelet transfusions in hematology/oncology patients reduced count increments and time between transfusions
• Hematology/oncology patients should receive resting platelet concentrates
• Directing platelet concentrates according to resting and activated status may allow for better patient outcomes and improved management of hospital resources.

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References