Occurrence & risk factors for potentially fatal bleeding disorder called posttransfusion purpura (PTP) among the U.S. elderly patients

The risk of developing a rare but potentially fatal severe bleeding disorder is higher among certain groups of elderly inpatient Medicare beneficiaries receiving transfusions of blood or certain blood components.

Posttransfusion purpura occurrence and potential risk factors among the inpatient US elderly, as recorded in large Medicare databases during 2011 through 2012

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Posttransfusion purpura (PTP): A rare transfusion complication resulting in a substantial decrease in platelets, leading to severe bleeding

- Significant decrease in level of blood-clot-forming platelets
- Occurs within 5-10 days after blood transfusion
- Potentially fatal bleeding from mucous membranes, gastrointestinal and urinary tracts, and intracranial hemorrhage

Office of Biostatistics and Epidemiology (OBE) conducted the first population-based study of PTP occurrence and potential risk factors among inpatient U.S. elderly ages 65 and older

Context of OBE study

- Individuals with PTP appear to produce antibodies against platelet proteins
- Initial exposure to these proteins likely occurs during pregnancy (exposure to fetal blood) or with a prior blood transfusion
- Antibodies attack both patient’s own platelets and donor platelets, causing PTP

Design of OBE study

- Examine large Medicare databases for reports of transfusions of blood and blood components and diagnoses of PTP among elderly individuals for the calendar years 2011 and 2012
- Evaluate PTP rates according to age, sex, race, number of units and type of blood components transfused
- Assess effects of blood components and units transfused, demographic characteristics, underlying health conditions, histories of transfusions and transplants, while controlling for potential confounders

Findings of OBE study

- 78 patients had a PTP diagnosis recorded among 4,336,338 inpatient transfusion stays for elderly during the study period (1.8 per 100,000 stays)
- Transfusion with platelets, either alone or in combination with red blood cells and/or plasma, substantially increased PTP risk among elderly patients
- Higher risk of PTP occurrence with increasing number of blood units transfused, especially among older elderly ages 80 and above
- Significantly increased risk for PTP in patients with histories of cardiac arrhythmias, leukemia, and transplantation of organs, tissues, or stem cells
- Evidence for increased risk of PTP with certain medical history:
  - blood transfusion(s)
  - antiarrhythmic medication(s) use
  - heparin-induced thrombocytopenia
  - younger elderly women (65-79 years of age) as compared to younger elderly males

The study shows a substantially increased risk of PTP with platelet-containing transfusions, supports the importance of prior alloimmunizations (e.g., pregnancies, transfusions, transplantations) in the occurrence of PTP, and suggests the significance of underlying health conditions in the development of PTP.

The study findings also suggest higher risk of PTP occurrence with increasing number of blood units transfused, especially among elderly individuals ages 80 and above.

In summary, physicians should be aware of the potential for PTP occurrence in elderly individuals, who are more likely to be critically ill, with prior alloimmunizations and a potentially higher prevalence of underlying risk factors for PTP.