

A potential food-related acute allergic transfusion reaction

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Dear Sir,

A 30-year-old female was admitted to a hospital with a sickle cell vaso-occlusive pain crisis. She had a history of iron overload related to multiple previous blood transfusions, was alloimmunized to multiple red blood cell (RBC) antigens, and had plasma antibodies reactive to all tested reagent RBC's. Her hemoglobin concentration upon admission was 4.7 g/dL (range 11-14.5 g/dL). The following day, her hemoglobin concentration decreased to 4.0 g/dL and she exhibited dyspnea. Antigen-negative RBC units were not immediately available; after a delay of more than 48 hours, a single unit of crossmatch compatible RBC's was procured and transfused. Twenty-five minutes after the transfusion began, the patient experienced diffuse pruritus. The transfusion was stopped, intravenous diphenhydramine was administered, and the patient received the remainder of the unit uneventfully. Further investigation revealed that the patient had a history of peanut allergy. Given that the transfused RBC product was crossmatch compatible and that the patient had previously tolerated multiple transfusions of RBC's without complication, a reaction to peanut allergen transferred through the transfused blood product was considered as a potential cause of the allergic reaction. Allergic transfusion reactions occur in up to one out of every 1,200 blood transfusions¹. IgE antibodies are the most common immunological mechanism implicated in food allergies, and passive transfer of IgE antibodies through donated blood products can cause a new allergy in non-atopic individuals². These allergic reactions are typically delayed and transient, and initially manifest days to weeks after blood product transfusion. In contrast to the delayed IgE-mediated reactions, acute allergic transfusion reactions may also occur due to food allergens passively transferred from donor blood to previously sensitized individuals. One of the first reported descriptions of this concept involved the case of a pregnant woman who received serial injections of her husband's blood in an effort to treat severe hyperemesis gravidarum³. The woman, who had a history of multiple food allergies, experienced her typical allergic reaction symptoms after the injections, and it was subsequently discovered that her husband had consumed the foods she was allergic to prior to the transfer of blood from him to his wife. Commercial assays to detect the presence of food allergens in blood products are not readily available in the United States, and thus we were unable to confirm the presence of peanut allergen in the RBC's received by the patient in our case⁴. In addition, because our patient's symptoms were mild, the blood supplier was not contacted to inquire about the donor's dietary habits prior to blood donation. Although passive allergen transfer was strongly suspected as the cause of the allergic transfusion reaction, it is possible that another IgE-antigen

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interaction, complement component, or other mast cell activation was also responsible for the reaction.

In the United States, severe allergies are currently not a contraindication to blood donation, and donors are not required to restrict or report dietary habits. Given the increasing prevalence of food allergies, it is likely that the incidence of food-related allergic transfusion reactions will also increase in future years.

Keywords: transfusion reaction, anemia, food hypersensitivity, peanut hypersensitivity.

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