usefulness has not been established in this setting, and its role in MDS and AML development is not resolved. This reinforces our view that there is a need for a large randomized trial comparing antithymocyte globulin and cyclosporin with or without G-CSF, which the European Group for Blood and Marrow Transplantation is currently running.

To the editor:

Apparent nonhemolytic alloantibody-induced red-cell antigen loss from transfused erythrocytes

Zimring et al demonstrated alloantibody-induced nonhemolytic antigen loss following red blood cell (RBC) transfusion in a murine model. Human RBC antigen suppression has been primarily described in the setting of autoimmune hemolytic anemia. It is most frequently associated with the Kell blood group antigens, but has been reported in others, including the Rh, Kidd, Duffy, and Lutheran blood groups. The frequency of alloantibody-induced antigen loss following the transfusion of incompatible blood in humans is unknown. We observed alloantibody-induced surface antigen loss in a patient following RBC transfusion.

An 86-year-old group AB Rh-(D) negative male with a history of chronic lymphocytic leukemia (CLL) received 2 units of group A Rh-(D) negative RBCs for symptomatic anemia. An antibody screen (ImmucorGamma, Norcross, GA) performed prior to transfusion demonstrated no alloantibodies. A follow-up antibody screen performed 14 days later demonstrated a new anti-Jkb alloantibody. Forward typing showed mixed-field agglutination with the anti-B reagent, confirming the persistence of transfused group A donor RBCs (Table 1). The direct antiglobulin test (DAT) was negative using both monospecific anti-IgG and anti-C3b reagents, and an eluate was prepared (Gamma Eli-Kit, Norcross, GA) and showed no reactivity when tested against a panel of screening cells using polyethylene glycol enhancement (Immucor-Gamma). No abnormalities in the patient’s lactose dehydrogenase (LDH) or total bilirubin were noted, and haptoglobin was not decreased. Segments from the transfused RBC components were subsequently antigen typed (Gamma Biologicals Inc, Houston, TX; Immucor-Gamma). Both donor red cell units were positive for the Jkb antigen. A pretransfusion patient sample was antigen typed and found to be negative for the Jkb antigen. Antigen typing of the patient’s posttransfusion sample, however, showed no evidence of Jkb-positive red cells.

The lack of Jkb antigen positivity in the patient’s posttransfusion sample was puzzling, since both transfused components were Jkb positive, and transfused RBCs clearly remained in circulation. Interference with Jkb antigen typing due to bound anti-Jkb antibody was unlikely, since the posttransfusion DAT and eluate were negative. Phenotypes obtained from the transfused components and the patient’s pre- and posttransfusion samples were directly compared (Table 1).

Based on the observed antigen typings of the donor red-cell units and evidence for mixed-field agglutination in the patient’s posttransfusion specimen for C, K, Fy, Fy, N, and S antigens, there was clear evidence for persistence of donor cells from both transfused units (Table 1). C-antigen mixed-field agglutination in the posttransfusion sample demonstrated survival of RBCs from component 1, while Kell mixed-field antigen agglutination in the posttransfusion sample demonstrated survival of RBCs from component 2.

The failure to detect Jkb antigen on circulating red cells in this patient’s posttransfusion specimen supports the findings by Zimring et al, and suggests that in human subjects, alloantibodies may specifically remove their target antigen from donor RBCs without further compromising survival of these cells. While autoantibody-mediated transient loss of RBC antigen expression on transfused RBCs has been previously reported, this patient represents the first example of antigen suppression following transfusion in a patient without evidence of autoimmune hemolytic anemia.

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References


Table 1. Antigen typing of patient pre- and posttransfusion samples and transfused RBC components

<table>
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<th>A</th>
<th>B</th>
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<th>E</th>
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<th>N</th>
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</table>

mf indicates mixed field; NP, not performed; and QNS, quantity not sufficient.
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