CORRESPONDENCE

Prevention of Transfusion-Associated Cytomegalovirus Infection: Defining the Method of Preparation for Leukocyte-Reduced Blood Products

To the Editor:

Bowden et al, recently reported on a prospective, randomized trial comparing leukocyte-reduced and cytomegalovirus (CMV)-seronegative blood products for the prevention of transfusion-associated CMV infection in which filtration was selected as the means of leukocyte-reduction. They concluded that "filtration is an effective alternative to the use of seronegative blood products for prevention of transfusion-associated CMV infection in marrow transplant patients." This conclusion seems to suggest or may be interpreted as suggesting that filtration is the only method of leukocyte reduction. However, the vehicle of CMV transmission by transfusion is accepted as the leukocyte, as supported by clinical and laboratory studies. Therefore, the objective for obtaining seronegative equivalent blood products is effective and consistent removal of leukocytes without regard to the method of removal. In studies referenced by Bowden et al, centrifugation was effectively used by other groups to reduce the total white blood cell (WBC) burden per transfusion for the prevention of primary CMV infection. de Graan-Hentzen et al performed an extra centrifugation step to remove WBCs from platelet concentrates, resulting in less than $1 \times 10^6$ total WBCs per 4 to 6 units. Bowden et al performed a final centrifugation on a pool of 4 to 6 platelet units to achieve greater than 99.8% leukocyte removal. It is also generally accepted that frozen/thawed, deglycerolized red blood cells do not transmit CMV and are equivalent to seronegative products. New technology for WBC removal has recently been reported by Elfath et al that is capable of reliably providing greater than 99% of apheresis platelets with less than $1 \times 10^6$ total WBCs without the need for secondary filtration. Therefore, other viable alternatives to effective, reliable leukocyte reduction exist, and others may be on the development horizon. Although filtration remains a suitable approach, any means of consistent leukocyte reduction should yield a product effective in prevention of CMV infection. We are interested in Bowden et al's views on this issue.

REFERENCES


Response

The letter by Dumont and Schuyler raises a very good point, namely that filtration is not the only method of leukocyte depletion that can result in reduction of the risk of CMV. Certainly, the use of frozen deglycerolized red blood cells was the first reported method shown to result in a CMV-safe product. The most common question asked of the authors of our report is whether current pheresis machines, which result in a log reduction of leukocytes to less than $10^6$/transfusion, should also be able to provide CMV-safe blood without further filtration. Although this technology has not been evaluated in studies with CMV endpoints, the answer is likely to be yes, as long as a 3 log or greater leukocyte reduction is achieved. That appears to be the critical factor. We appreciate the clarification of this issue.

Larry J. Dumont
Robert Schuyler
COBE BCT, Inc
Lakewood, CO

Raleigh A. Bowden
Program in Infectious Diseases
Fred Hutchinson Cancer Research Center
Seattle, WA
Prevention of transfusion-associated cytomegalovirus infection: defining the method of preparation for leukocyte-reduced blood products [letter; comment]

LJ Dumont and R Schuyler