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Blood Product Support for the Oncology Patient

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Blood Product Support for the Oncology Patient

Ted Wun, MD, FACP

I. INTRODUCTION

- A. The ability to provide adequate blood product support has made most of modern, dose-intensive therapy in oncology possible. For example, leukemia induction and consolidation therapy cannot be safely done without the ability to provide platelet and, to a lesser extent, packed red blood cell (PRBC) transfusions. This review will focus on the indications for blood component therapy, complications of therapy, and special blood product manipulations. Although the principles are broadly applicable to all patients, emphasis will be placed on issues relevant to patients with hematological malignancies and solid tumors. The topics of stem cell transplantation and donor lymphocyte transfusion are beyond the scope of this review.
- B. Allogeneic (homologous) transfusions will be reviewed; autologous donation has limited applicability in oncology.
- C. Although the introduction of recombinant hematopoietic growth factors and peripheral stem cell (as opposed to bone marrow) transplantation has decreased the need for blood products, these innovations have not eliminated the necessity for blood component therapy.
- D. The indications for blood component therapy have evolved during the last 2 decades, and new complications have been recognized. Thus, the potential benefits of transfusion must be weighed against the attendant risks.
1. The most basic indication for PRBC transfusion is symptomatic anemia. The classic transfusion threshold of “10/30” (which is used to signify a hemoglobin level of 10 g/dL and a hematocrit of 30%) is not justified by available data. Although the use of a numerical trigger is not encouraged, a transfusion trigger of either 8.0 g/dL (proposed by the National Institutes of Health) or 7.0 g/dL (the American Association of Blood Banks) has been proposed.¹⁻⁵
 2. The decision to transfuse PRBC should be based on how well the patient tolerates the anemia. For example, an older person with angina and/or chronic obstructive pulmonary disease may not tolerate the same low level of hemoglobin as a younger, healthier person.
 3. In a patient with bleeding or a significant bleeding risk (eg, in uremia), a hematocrit of 27% or more may improve primary hemostatic function.^{6,7}
 4. Some data suggest that a higher hemoglobin level is associated with improved outcome for patients with certain malignancies (eg, cervix cancer undergoing combined radiation and chemotherapy).^{8,9} If these data are confirmed, then PRBC transfusion may be indicated in these patients if the hemoglobin level cannot be raised to adequate levels with erythropoietin therapy. However, there are also controversial studies¹⁰⁻¹⁴ showing an increased mortality after transfusion with colon cancer.
 5. Some studies show an improved quality of life with a higher hemoglobin level for patients with malignancies. Most of these studies incorporated the use of erythropoietin rather than PRBC transfusions.^{15,16}

II. INDICATIONS FOR BLOOD COMPONENT THERAPY

- A. **Whole blood therapy** is not indicated, and most transfusion medicine services no longer offer the product.
- B. **Packed erythrocyte transfusion**
- C. **Platelet transfusions**
1. Platelet transfusions are indicated in symptomatic thrombocytopenia, as prophylaxis against bleeding for patients with thrombocytopenia,