Preoperative Anemia Considerations

To the Editor:
We read with interest the article from Goodnough and Shander entitled “Patient Blood Management.” The authors include an algorithm for the detection, evaluation, and management of preoperative anemia. This algorithm is based on the algorithm published in 2011 by Goodnough et al., and it is helpful to evaluate and treat preoperative anemia, especially in the range of 28 days before surgery. However, it strikes us that the evaluation of iron to ferritin values between 30 and 100 µg/l and/or transferrin saturation greater than 20% indicates iron therapy to rule out iron deficiency. We suggest that a transferrin saturation greater than 20% is probably incorrect, and it should be less than 20% as shown in the algorithm published in the 2011 Network for Advancement of Transfusion Alternatives guidelines, which itself would be consistent with iron deficiency, and no more than 20%, which excludes iron deficiency.

Moreover, we believe that in the initial study of anemia proposed by the authors, it is useful to analyze the reticulocyte count and mean corpuscular volume to further refine the type of anemia (e.g., thalassemia, myelodysplasia, hemolysis) and refer the patient to a hematologist in some of these cases (e.g., rule out thalassemia in microcytic anemia case with reticulocyte production index <2 and without iron deficiency).

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References

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In Reply:
We are grateful to Drs. Alonso and Banqueri for pointing out the typographical error in our reformatted figure of the originally published algorithm for the preoperative evaluation and management of anemia; as specified in the algorithm, for the patients with transferrin saturation less than 20% and ferritin levels 30–100 µg/dl, empiric iron therapy is appropriate to rule out the possibility of iron deficiency. On the other hand, it is noteworthy that the threshold of 20% for transferrin saturation is also empiric, so that values above this threshold do not necessarily exclude iron deficiency, particularly in patients who are unresponsive to erythropoiesis-stimulating agent therapy. For example, the recently issued Kidney Disease: Improving Global Outcomes guidelines for patients with chronic kidney disease recommend a trial of iron therapy for patients with transferrin saturation less than 30%. Similarly, suggested ferritin levels are also empiric in the Kidney Disease: Improving Global Outcomes guidelines; the recently published National Comprehensive Cancer Network guidelines recommend a trial of iron therapy for patients with cancer for whom anemia has been unresponsive to erythropoiesis-stimulating agent therapy with ferritin levels less than or equal to 800 ng/ml and transferrin saturation less than 20%.

The authors also advocate the use of reticulocyte values and red cell size to entertain the possibility of undiagnosed hemolytic anemia such as in patients with thalassemia. Our cited algorithm was designed to be initially focused on iron-restricted erythropoiesis because of its high prevalence in both normal populations and in a variety of important patient settings, including a significant percentage of the elderly. Because preadmission testing and evaluation of anemia in patients scheduled for elective surgery has been shown to identify unexpected anemia in up to 30% of patients scheduled for elective orthopedic surgery, the conclusion is that traditional anemia workups based on red cell size (mean corpuscular volume) (as traditionally taught to undergraduates) are not recalled, too complex, or not used effectively by primary physicians (family practitioners, internists, and gynecologists) who need to be able to evaluate these anemias. In addition, microcytosis is nonspecific because the anemia of inflammation, as an iron sequestration syndrome, can also manifest microcytosis. Furthermore, the mean corpuscular volume has only a 70% sensitivity for identifying iron deficiency. Finally, a hematologist consult is always appropriate if and when the algorithm fails to diagnose the cause of the patient’s anemia.

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References