

Hemolysis and transfusion of old packed red blood cells in critical patients[☆]



Hemólisis y transfusión de concentrados de hematíes «viejos» en pacientes críticos

Dear Sir,

Thank you for your interest in our article.¹ It addresses a very current subject that generates much controversy, and with which we are greatly committed. We are aware of the importance of patient safety when receiving a blood transfusion, and we therefore seek to apply measures capable of reducing the adverse effects and improving transfusion yield.

In reply to your questions about the methodology, with regard to the blood component, we do keep a registry of the age of the packed red blood cells, knowing that some authors have demonstrated the appearance of adverse effects associated to the transfusion of "old blood".² In our study, each blood product was supplied by the hospital blood bank, specifying the characteristics of the product, together with its extraction and expiry dates. No specific analysis of each packed red blood cell unit was made, though all the units met the following characteristics according to the blood bank: storage in saline–adenine–glucose–mannitol, a volume of 250 ml, a minimum content of 45 g of hemoglobin per transfused unit, minimum red cell viability of 80%, hematocrit 60–80%, and a shelf life of 42 days counting from the date of extraction.

With regard to the compatibility of the packed red blood cells, no specific analysis was made, though compatibility was guaranteed by the protocol applied in the center, involving cross-tests with the patient and blood products. Likewise, we did not specifically quantify the post-transfusion potassium levels, though this aspect would be of interest in future studies.

We analyzed the transfusion yield and degree of hemolysis, calculated with respect to the patient body surface, using the formula of Dubois and Dubois.³ Both parameters were also analyzed according to the age of the packed red blood cells. In this respect, we found the yield to be lower than expected, and the degree of hemolysis higher, in the case of older cells (age over 14 days). However, these differences failed to reach statistical significance due to the small proportion of young blood cells in the study sample. In fact, and as a result of this study, a change in transfusion policy was decided in agreement with the blood bank, with the supply from that time onwards of a larger proportion of packed red blood cells corresponding to young blood (under 14 days).

With regard to the patients that required a second transfusion, 19% needed it in the course of admission to the Intensive Care Unit (ICU), though only two patients required a second transfusion in the 24 h following the first transfusion. We therefore agree that the administration of a packed red blood cell unit may be a valid option. Likewise, and although no specific analysis was made in this respect, we agree with the Blood Product Work Group⁴ that a hemoglobin control every 24 h suffices in patients of this kind, thereby avoiding "vampirism".

Lastly, in relation to premedication and diuretic use, the transfusion protocol in our center⁵ does not contemplate their administration on a routine basis; as a result, such products were not used in any of the patients in our study.

We hope to have clarified the issues raised in relation to our study, and again wish to express our thanks for the interest shown both in the article and in the subject. We have a shared concern in this field, and hope to carry out more studies with a view to improving the transfusion policies.

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