

RANDOMIZED CLINICAL TRIAL COMPARING LIBERAL AND RESTRICTIVE RED BLOOD CELLS TRANSFUSION STRATEGIES IN SEVERE TRAUMATIC BRAIN INJURY

Wellingson S. Paiva MD PhD; Davi Solla; Milena Azevedo MD; Luis M Maubuisson MD PhD; Edson Bor-Seng-Shu MD, PhD; Manoel Jacobsen Teixeira; Andre L Gobatto MD

Introduction

Anemia is frequent among traumatic brain injured (TBI) patients, and it is associated with an increased risk of poor outcomes. The optimal hemoglobin (Hb) level to trigger red blood cell (RBC) transfusions in TBI patients is yet to be defined. We aimed to evaluate the feasibility and safety of creating a hemoglobin gradient between TBI patients submitted to restrictive or liberal transfusion strategies in the ICU, to compare their hospital mortality.

Methods

This is a randomized, open label, with allocation concealment and intention to treat phase 2 trial. 44 adult patients with severe TBI were randomized either to a "restrictive group", with an Hb transfusion threshold level of 7g/dL or to a "liberal group", with an Hb transfusion threshold level of 9g/dL. Transfusion strategies were maintained for up to 14 days or to ICU discharge. The outcomes were hospital mortality, mean Hb difference, transfusion requirements, length of stay.

Results

There was no baseline difference between the groups. Mean age was 34.5±13.4 years, the mean CRASH score 14-day death risk was 40.7±18.9 in the restrictive group and 39.3±18.4 in liberal group (p=0.818). ICU admission Hb levels (g/dL) were 10.3±1.6 in restrictive group and 10.1 ± 1.2 in liberal group (p=0.550). The average 14 days Hb level was 8.4 ± 1.0 and 9.3 ± 1.3 (p<0.001). During ICU stay, RBC transfusion was administered to 13 (56.5%) patients of the restrictive group (total 35 RBC units) and to all (100.0%) (p=0.001) from the liberal group (a total of 35 and 66 RBC units, respectively; p=0.022). This correlation was stronger on the liberal group (Hb range 7.1-12.6g/dL) than the restrictive one (Hb 6.2-10.7g/dL). Hospital mortality was higher in the restrictive group, seven (30.4%), versus one (4.8%) patient (p= 0.048).

Conclusions

Creating a hemoglobin gradient between the groups was feasible. Mortality was higher in restrictive group.



Hemoglobin profile in the two groups during ICU admission

Learning Objectives

To discuss about the importance of anemia in patients with severe traumatic brain injury

To analyze two method to treat this cases, using a restorative or liberal red cell transfusion

To analyze the hospital mortality and hemodynamic encephalic aspects in two groups of patients with severe traumatic brain injury submitted to two different blood transfusion protocols.

References

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