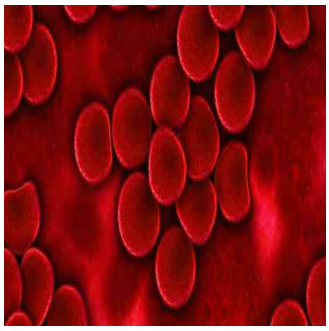
ICU
MANAGEMENT & PRACTICE

Study: Effective Transfusion in Severe Trauma



Among patients with severe trauma and major bleeding, those who received a transfusion of a balanced ratio of plasma, platelets, and red blood cells (RBCs) were more likely to have their bleeding stopped and less likely to die due to loss of blood by 24 hours compared to patients who received a transfusion with a higher ratio of RBCs, according to a study just published in JAMA. There was no significant difference in overall death at 24 hours or at 30 days between the two transfusion strategies.

Around twenty to forty percent of trauma deaths occurring after hospital admission result from massive haemorrhage from an injury to the trunk of the body. These are potentially preventable with rapid haemorrhage control and improved resuscitation techniques. These patients often require massive transfusion. Earlier transfusion with balanced blood product ratios (1:1:1 ratios for plasma, platelets, and red blood cells), defined as “damage control resuscitation”, has been associated with improved outcomes; however, there have been no large multicentre clinical trials, according to the article.

John B. Holcomb, MD, of the University of Texas Health Science Center at Houston, and colleagues conducted a study in which 680 severely injured patients who arrived at 1 of 12 level I trauma centres and were predicted to require massive transfusion were randomly assigned to receive blood product ratios of 1:1:1 for units of plasma to platelets to red blood cells (a ratio that is the closest approximation to reconstituted whole blood), or 1:1:2, during active resuscitation in addition to all local standard interventions. Patients were assigned to one of these component ratios within 8 minutes of calling the blood bank, allowing the rapid delivery and infusion of the predetermined ratios.

The researchers found no significant differences for the primary outcomes of the study: mortality at 24 hours (12.7 percent in 1:1:1 group vs 17.0 percent in 1:1:2 group) or at 30 days (22.4 percent vs 26.1 percent, respectively). Exsanguination (extensive loss of blood), which was the predominant cause of death within the first 24 hours, was significantly decreased in the 1:1:1 group (9.2 percent vs 14.6 percent in 1:1:2 group). More patients in the 1:1:1 group achieved haemostasis than in the 1:1:2 group (86 percent vs 78 percent, respectively).

Despite concerns that the 1:1:1 group would experience higher rates of multiple inflammatory-mediated complications such as acute respiratory distress syndrome, multiple organ failure, infection, blood clots, and sepsis, no differences were detected between the two treatment groups.

“Given the lower percentage of deaths from exsanguination and our failure to find differences in safety, clinicians should consider using a 1:1:1 transfusion protocol, starting with the initial units transfused while patients are actively bleeding, and then transitioning to laboratory-guided treatment once haemorrhage control is achieved. Future studies of haemorrhage control products, devices, and interventions should concentrate on the physiologically relevant period of active bleeding after injury and use acute complications and later deaths (24 hours and 30 days) as safety end points,” the authors write.

Source: JAMA
Image source: Pixabay

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