



## EDITORIAL

### Need for multidisciplinary massive transfusion protocol for non-trauma patient



### Necesidad de Protocolo de Transfusión Masiva Multidisciplinaria en Paciente No Traumático

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At this moment, massive transfusion (MT) (replacements predefined protocols 1/1/1 and the use of concentrated blood coagulations factors) and the use of direct anticoagulants (monitoring and antidote) are the two trending topics relating to critically ill and bleeding patients.<sup>1</sup> The urgent need for a predefined treatment of hemostasis, as well as a quick and safe anticoagulant treatment reversion in bleeding patients with or without trauma, and the availability of dynamic and quick diagnostic tests and algorithms to guide professionals who work in these areas, represent a real medical necessity.<sup>2</sup>

Massive bleeding (MB) is considered a serious health problem with an unknown incidence, and it has different causes that include: multiple trauma; postpartum and surgery disorders; and gastrointestinal bleeding.<sup>3,5</sup> Even though medical technology has advanced, MB has been related to higher morbidity and mortality, reaching 50% in some studies, depending on causes and its treatment.<sup>3</sup>

Its management should be multidisciplinary and immediate. However, it is found that there is great variability

in daily clinical practice. We need to establish consensus proposals that serve as an application pattern in the prevention, diagnosis, rapid response, assessment and application of appropriate therapeutic control measures.<sup>4</sup>

Classical definition of MB is arbitrary and with low clinical significance.<sup>5</sup> The most common definitions are: blood loss at a 150 ml/min rate for more than 10 min; loss of a complete blood volume within 24 h; critical bleeding that requires transfusion of 4 RBP within the first hour; loss of 1–1.5 of the effective circulating volume within 24 h; loss of 50% of the effective circulating volume *within three hours and threatens life resulting in MT*.<sup>5</sup> Nevertheless any of these definitions can easily activate a specific massive transfusion protocol (MTP).

In recent years, based on the Danish civil experience<sup>6</sup> and military medical practice in Afghanistan and during the Gulf war,<sup>7</sup> some definitions have changed, especially those relating to trauma associated coagulopathy which is defined as "an hemorrhagic situation caused by hypocoagulability and hyperfibrinolysis environment secondary to multiple factors", classical hemotherapy schemes, the early use of fresh frozen plasma (FFP) (not only as a fibrinogen source), point of care monitoring devices and changes in therapeutic objectives.<sup>5</sup>

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Even though we can consider these definitions (administration of blood products by predefined rates and/or concentrated coagulation factors guided by viscoelastic tests) a new paradigm in the treatment of a bleeding patient,<sup>8</sup> there are still a lot of doubts that have no answers in the few available clinical trials. We still don't know which is the best dose, ratio, administration time, sequence or volume of the blood products. Usually critically ill patients cannot be compared with those included in the military trial, which makes the interpretation of outcomes complex.<sup>5</sup>

This issue of *Medicina Intensiva* includes an interesting trial<sup>9</sup> of real clinical practice – even though it is a single centre, retrospective study – about the influence in the utilisation of a MT Protocol related to early mortality (24h), mid-term (30 days) in non-trauma patients with MB. Activating MTP reduced mortality significantly. Because of the characteristics of this study, controlling confounding factors is a limitation and external validity is questioned; therefore it could be interrelated as an association rather than a cause effect result. In this context, it would be interesting to know the experience of other centres, and whether the results could be generalised through analysis of surveys and records. In the meantime we should work with the existing trials and try to provide an MTP in our hospitals, or at least investigate the results in the centres that have implemented it.

There are very few quality studies about this subject in Spain and the international experience is almost all focused on the trauma patient.<sup>7</sup> Providing MTP has adaptable characteristics that could be applied to other hospitals.<sup>9</sup> In this trial MTP is activated by the Transfusion Service (old local "Blood Bank").<sup>9</sup> This means that there is an experienced leader who has been trained in coagulopathy and hemotherapy, who is able to control the use of blood products and to interpret the obtained test results. This leader can also avoid delays in activation of MTP in patients admitted. In this trial, technology plays an important role because specific software is needed to activate the MTP algorithm.<sup>9</sup>

In conclusion, it is important to elaborate MTP, have the knowledge and availability of blood products and a leader in charge to coordinate the treatment of the bleeding patient, and help solve logistical problems specific to each centre. We believe that clinical practice done by Intensive Care physicians related to transplant coordination could also be applied in the treatment of the bleeding patient (taking into account that the critical patient expends more blood products second only to hematologic patients) and the Transfusion Service and Coagulation Laboratories need to take a more active role.

We would like to recognize the effort these authors<sup>9</sup> have made in this multidisciplinary trial that combines hemotherapy and hemostasis in MB. The trial, Documento de Sevilla de Alternativas a la Transfusión Sanguínea,<sup>10</sup> has already shown that different specialties in Spain can work together for the good of our patients.

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## Conflict of interest

The authors declare that they have no conflict of interest.

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