

Transfusion management of the war wounded in Mali: Current situation and perspectives

Alhassane BA^{1,2}, Abdoulaye KANE^{1,3}, Thierno Madani DIOP^{1,4,5}, Mamane MARIKO^{1,6,7}, Seydou Simbo DIAKITE^{8,9}, Madani OUOLOGUEM^{1,10}. Mali

1. Direction Centrale des Services de Santé des Armées, Kati, Mali
2. Centre National de Transfusion Sanguine de Bamako
3. Direction santé, militaire de Gao
4. Faculté de Médecine et d'Odontostomatologie de l'Université des Sciences des Techniques et des Technologies de Bamako (USTTB)
5. Centre Hospitalier Universitaire (CHU) Gabriel Touré, Bamako
6. Infirmerie centrale de l'armée de terre
7. Centre Hospitalier Universitaire « le Luxembourg »
8. Centre Hospitalier Universitaire Kati
9. Faculté de Pharmacie USTTB
10. Infirmerie Hôpital de Bamako

Introduction

Transfusion resuscitation is part of "damage control resuscitation" which must stop the hemorrhage and preserve an effective coagulopathy [1]. The war wounded in Mali have traumatic injuries with a high potential for hemorrhage and the use of blood products is a determining factor in their management. Given the geographical situation, the majority of military casualties die during pre-hospital care due to the lack of an adequate transfusion strategy. The role of pre-hospital transfusion, and in particular plasma, remains an interesting avenue for countering coagulopathy, especially in a field where we encounter wounded requiring massive transfusions. The current context imposes on the service de santé des armées (SSA) the development of

a transfusion strategy whose objectives are the survival of the wounded and the prevention of sequelae.

Situation

Since 2013, Mali has been affected by conflicts that extend over two-thirds of its territory (Fig1), particularly in the center and north. These conflicts particularly affect the military in various forms of attack, but also the civilian populations who are very often victims of terrorist attacks and community conflicts. The treatment of victims of conflict shows a crucial need for blood products in the various conflict zones.

The organization of the SSA has eight health directorates for which the care of conflict victims is a priority. To date, we note the absence of a transfusion service for the Malian armed forces, to ensure the transfusion of the wounded. This situation has created and strengthened collaboration between the SSA and the structures of the Ministry of Health. The care of a war casualty in a conflict zone is provided by the health directorate of the military region before evacuation to a hospital, depending on the severity of the trauma. In case of blood transfusion, blood products (whole blood) are provided by the health structures of the Ministry of Health or by the foreign forces present in Mali. In addition, there is only the Centre National de Transfusion Sanguine (CNTS) based in Bamako and reporting to the Ministry of Health. Malian blood transfusion is constantly faced with a problem of availability of blood products, even in life-threatening emergencies. Although the number of donations increases from year to year, the need for products is also growing, this does not seem to satisfy the demands. As a reminder, the capital of Mali experienced a terrorist attack in 2015, targeting a local hotel. The victims treated by the hospitals received blood products from the CNTS. It is also to indicate that the blood products used in Bamako for the sick and victims of conflicts come only from the CNTS, which lacks the means to cover the entire territory.

In 2020 and 2021 respectively, a total of 369 and 520 red blood cell concentrates were delivered to the health care units of the SSA in Kati for the care of sick or wounded soldiers. These blood products, collected and prepared by the CNTS, were previously distributed to the blood bank of the Kati University Hospital. The blood products delivered for the SSA do not include plasma and platelets available at the CNTS.

Perspectives

The implementation of any strategy to develop an activity must first be based on an assessment of the situation. In the present situation, the inventory shows that there is effective collaboration between civilian and military structures to guarantee transfusion care for victims of conflict in Mali. However, difficulties persist in transfusion activities, particularly the lack of availability of blood products even in life-threatening emergencies and the lack of harmonization of transfusion practices at the central and peripheral levels. The outlook for the SSA can be summarized as follows :

- To make available, as close as possible to the forces engaged, kits for whole blood transfusion equivalent to the peripheral structures of the Ministry of Health;
- Implement a blood-sparing strategy through the provision of tranexamic acid;
- Create a blood transfusion center dedicated to the Malian armed forces in order to make blood products available in the regional directorates of the SSA, particularly those in the center and the north.

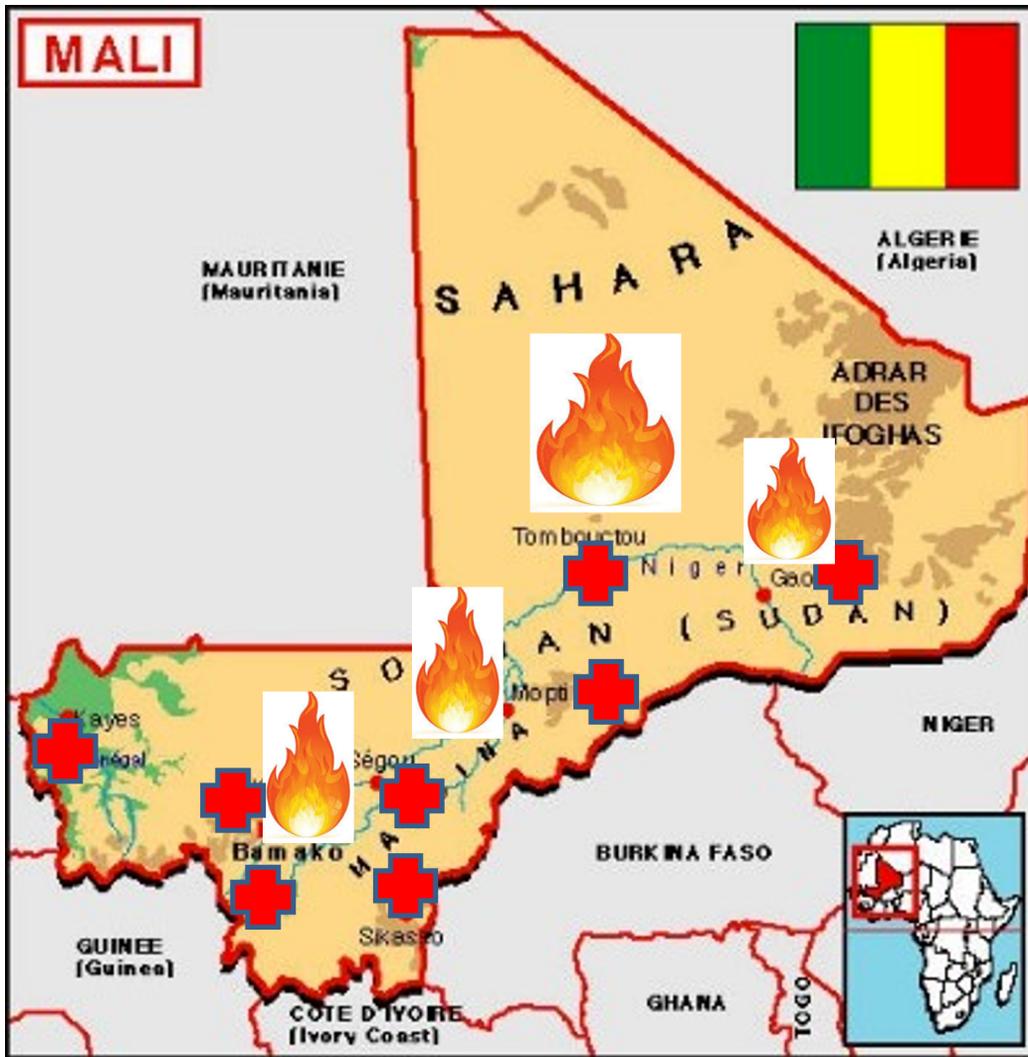
Conclusion

The care of civilian and military victims is part of the SSA's doctrine. This care would be efficient if the SSA had a blood transfusion service. The early recourse to blood products is certainly an effective means of resuscitation of the war wounded, especially in a difficult geographical context.

Reference

[1] Rossaint R, Bouillon B, Cerny V et al. The European guideline on management of major bleeding and coagulopathy following trauma; fourth edition. Crit Care. 2016; 20.

Fig 1. Organization of SSA and conflict zones



 health directorates SSA

 conflict zones