

## SEPSIS AND THROMBOSIS: ¿AVOIDABLE SYNERGY?

### SEPSIS Y TROMBOSIS: ¿SINERGIJA EVITABLE?

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**To the editor.** Severe sepsis is a major cause of morbidity and mortality, affecting between 36,000 and 64,000 person-years in the United Kingdom, with a mortality rate of 35%<sup>(1)</sup>. It is associated with activation of inflammatory and haemostatic systems that could lead to disseminated intravascular coagulation (DIC) and MODS (multiple organ dysfunction)<sup>(2)</sup>.

This massive and widespread microvascular thrombosis is associated with higher mortality rates<sup>(3)</sup>.

In sepsis, there are quite systems for grading severity. The SOFA score (Sequential Organ Failure Assessment), which determine severity level and development of organ failure, contemplates platelet count. These, decrease in sepsis. Nevertheless, none of the scores includes the INR (International normalized ratio) nor Prothrombin time prolongation, to assess sepsis severity or the risk of die or develop DIC. This is a limitation.

On the other hand, septic patients may simultaneously present other predisposing conditions that could increase risk for develop thrombosis. In this context, the existence of these conditions would not be predictable and an assessment of all these factors is not possible in clinical practice. In the table appear some conditions that could, in patients with or without sepsis, increase the risk of DIC and in an extreme situation, of amputations<sup>(4)</sup>.

In Peru, during March 2016, a young patient that had been attended for renal lithiasis, developed some complications<sup>(5)</sup>. Unfortunately it was necessary to use a urinary catheter which led to a complicated urinary infection, severe sepsis and probably, DIC. As a result of these events, she suffered amputations of upper and lower limbs. In this situation, the presence of another coexisting bleeding disorder, is possible. However, this is only a hypothesis. Taking account the severity of the clinical course, in the differential diagnosis we should consider the development of *Purpura fulminans* or *Phlegmasia cerulea dolens*, as entities that could explain these manifestations.

Wang, in the REGARDS study (reasons for Geographic and Racial Differences in Stroke cohort), in the United States, found that the presence of peripheral vascular insufficiency was independently associated with the development of sepsis and severe sepsis ( $p < 0,001$  for both of them). It could be a risk factor in some patients. It is very difficult to know how much it contributes to develop DIC.

Preventive measures for thrombosis may reduce the risk but not eliminate it. Nevertheless, when the sepsis process has

begun, there are no therapeutic agent to treat DIC. Jiang, in a systematic review during 2014, found that there was not an effective therapeutic regimen to treat DIC in patients with sepsis, yet.<sup>(6)</sup>

We believe that a constant communication between the health team, the patient and family is very important, especially in critically ill patients in which the course is unpredictable<sup>(8)</sup>. The daily report of potential complications such as organ failure, thrombosis, DIC and other complications, is crucial to avoid confusion in the family and keep safe the doctor-patient-family caregiver relationship.

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#### Table: Conditions that increase the risk or thrombosis

Antithrombin III Deficiency
C or S Protein deficiency
Factor V Leiden (resistance to activated protein C)
Elevated Levels of Factor VIII
Factor XII Deficiency
Plasminogen Generation Disorder.
Thromboembolic History.
Resistance to Fibrinolysis.
Endothelial damage.
Inherited or acquired Thrombophilia.
Coagulation disorders.
Organic Dysfunction.

Taken of: Martínez C., Quintana S. Factores de riesgo para trombosis. Revista de Hematología. 2005; 6(1): 3-4<sup>(7)</sup>

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