

## ‘σήψις’ yesterday, sepsis nowadays: what’s changing?

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Is my patient septic or not?—that is the question. Sepsis (from the ancient Greek, σήψις) is an “antique” medical issue, a multi-faced life threatening disease characterized by organ dysfunction due to a dis-regulated host response to infection (1). Hyper-inflammation and immunoparalysis (2) along with tissue damage caused by pathogens play a key role into the onset and progression of the disease.

Sepsis is a complex illness whose underlying pathophysiologic process is not completely discovered. Clinical manifestations of sepsis are various, related to the type of infection, the organ functional reserve and the genetic pattern of the patient (3). The worst manifestation of sepsis is septic shock, a state of circulatory failure (hypotension) and serious impairment of oxygen delivery and utilization (hyperlactacidemia) characterized by high mortality rate (1). Many other systems (respiratory, renal, cardiovascular, hepatic, hematologic, central nervous system) might be affected by septic process, frequently culminating in multi-organ failure.

Although thousand studies have been published on sepsis, they have produced conflicting evidence mainly due to the heterogeneous population investigated and the diagnostic inclusion criteria adopted. The epidemiology of sepsis is highly debated in terms of incidence and outcome, further the disease lacks of a universally accepted characterization conforming the entire scientific society.

Recently, an international task force of the Society of Critical Care Medicine (SCCM) and the European Society of Intensive Care Medicine (ESICM) has reviewed definitions of sepsis and septic shock (1). The Sepsis-3

definition is founded on expert consensus process evaluating the current clinical evidence about sepsis-induced illness (1,4,5). Sepsis-3 criteria validity have been tested on a large retrospective registry of electronic health recorded data sets (4,5) and needs prospective validation from everyday clinical practice. Sepsis-3 definition collected the most solid evidence about sepsis manifestation and might be considered a cornerstone diagnostic tool for each physician.

Zhang and co-workers published a well-written and updated review (6) on current guidelines for the diagnosis and early identification of sepsis in the hospital. The authors summarized the history of sepsis definition and highlighted the conflicting application of each one since 1992 up to 2016.

The identification of septic patients proceeds from a clinical evaluation of non-specific signs and symptoms that can not be counted and summed to achieve a pre-defined diagnostic cut-off (7). In addition, scoring systems and screening tools (8-12) have failed to reliably diagnose sepsis.

The diagnosis of sepsis might be achieved only if signs and symptoms of the patients are contextualized into each illness episode, evaluating the impact of co-morbidities and recent health-related events on to the clinical condition observed (surgery, trauma or baseline medical disease) (1).

Zhang *et al.* (6) reviewed the principal points of the diagnostic steps to move for the diagnosis of sepsis. An important issue of the sepsis diagnostic algorithm is the early recognition and subsequently treatment of the source of infection. Source recognition is based on clinical examination, biochemical and radiologic test (13). Infection is the ‘primum movens’ of sepsis and innovative

laboratory tests as Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry (MALDI-TOF MS), performed on biologic samples taken from the patient, allow to achieve an early microbiologic diagnosis (14). Early recognition of pathogens in sterile sites of the organism might be helpful to understand the clinical condition observed and to start with an early appropriate antimicrobial therapy. Early recognition and treatment of the infection represents a 'conditio sine qua non' sepsis can't be averted (13).

The diagnosis of sepsis is not simple and we agree with Zhang *et al.* (6) about the risk of identifying false positive and negative septic patients. However we think that treating a false positive patient is better than neglecting a false negative septic ill. No goal directed therapy is more lethal than sepsis.

The definition of sepsis is a work in progress (1) and much more efforts are needed to completely understand all the features of the disease. Current evidence enounced by the international consensus conferences and guidelines (1,13) provides the clinicians all the possible keys efficiently treat critically ill septic patients. Many items are changed compared to the past and sepsis is no longer a matter for shamans: now is the time of disenchantment.

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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