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New Definitions of Sepsis and the Quest for Specific Biomarkers. Are the miRNAs the Answer?

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Abstract
Sepsis represents a systemic illness, characterized by life-threatening organ dysfunction induced by infection. Early diagnostic, evaluation of severity of sepsis with aggressive resuscitation and administration of appropriate antibiotics are associated with improved outcomes. In 2016 a new definition of sepsis (Sepsis-3) was proposed. The key element of sepsis-induced organ dysfunction is defined by 'an acute change in total SOFA score ≥ 2 points consequent to infection'. The use of SIRS criteria as identification of sepsis was abandoned and subcategory of severe sepsis was eliminated. A wide spectrum of biomarkers had been proposed for potential use in sepsis, more than in other diseases, outlying the complex pathophysiology of this condition. The first study reporting the clinical value of circulating miRNAs in sepsis showed that both leukocytes and plasma miR-150 levels are significantly reduced in sepsis patients compared with controls and correlate with sepsis severity. Several miRNAs were found differentially expressed in sepsis patients, but most of the published studies failed to find miRNA biomarkers that could differentiate sepsis from SIRS. A solution to this problem seems to be building and analyzing miRNA network in sepsis patients.
Key words: sepsis definitions, specific biomarkers, miRNAs, miRNA network