

Pathological mechanisms and novel therapeutic outlooks for sepsis-associated acute lung injury

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Sepsis affects every major organ within the body, ultimately leading to their failure, and the development of one or more organs poses a major threat to the survival of septic patients. In sepsis, the respiratory system is the most frequently affected organ system, and lung dysfunction is the first step in the development of multiple organ failure. A major hurdle in the clinical management of septic patients suffering from acute lung injury and its most severe manifestation, the acute respiratory distress syndrome, is the lack of the effective treatment. The important goal in critical care medicine is to find significant therapeutic strategies that will impact favorably on patient outcome. Sepsis alters expression of many pathogenic factors that can potentially give rise to abnormalities in the respiratory system. A number of transcription factors, such as nuclear factor-kappaB and activator protein-1, can be linked to the altered gene activation during sepsis. Thus, several transcription factors may play a pivotal role in the pathophysiology of acute lung injury in sepsis. Given that sepsis can be regarded as a gene-related disorder, the potential usefulness of systemic delivery of decoy oligodeoxynucleotide against some transcription factors may be considered to be a promising novel therapeutic approach for treatment of acute lung injury in sepsis.