

CELLULAR-MOLECULAR MECHANISMS IN THE DEVELOPMENT OF PERITONITIS

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Introduction

Peritonitis is an inflammatory process involving cells, a synthesis of pro-inflammatory mediators (IL-6, TNF- α) and anti-inflammatory (IL-10, IL-27), which maintain inflammation. The cellular-molecular mechanisms that determine the evolution and prognosis of peritonitis are not fully elucidated.

Keywords: cytokines, interleukins, biomarkers, peritonitis, sepsis, adrenomedullin.

Purpose

Study of the evolutions of cellulo-molecular changes at the level of peritoneum and blood, in correlation with the pathogen. Identification of new methods of diagnosis and treatment in peritoneal sepsis

Material and Methods

The current references from the international scientific literature were examined, implicitly the databases of the electronic libraries PubMed, GeneCards and Annals of Translational Medicine.

Results

Peritonitis is an inflammatory process that goes through 2 antagonistic stages - hyperinflammation and hypoinflammation (immunoparalysis) fig. 1, and as in any inflammation it goes through several cycles. At each stage some specific interleukins are secreted, depending on this the condition of the organism, the prognosis and the adequate treatment can be diagnosed. The cytokine storm triggered in peritonitis is interdependent with the pathogen, in table no. 1 with specific biomarkers, for some infections. So far it is not a specific biomarker to indicate the severity of inflammation and its prognosis, but a precursor of adrenomodulin has been found, it is the most sensitive according to the severity of sepsis, which is a help for ICU, table no.2.

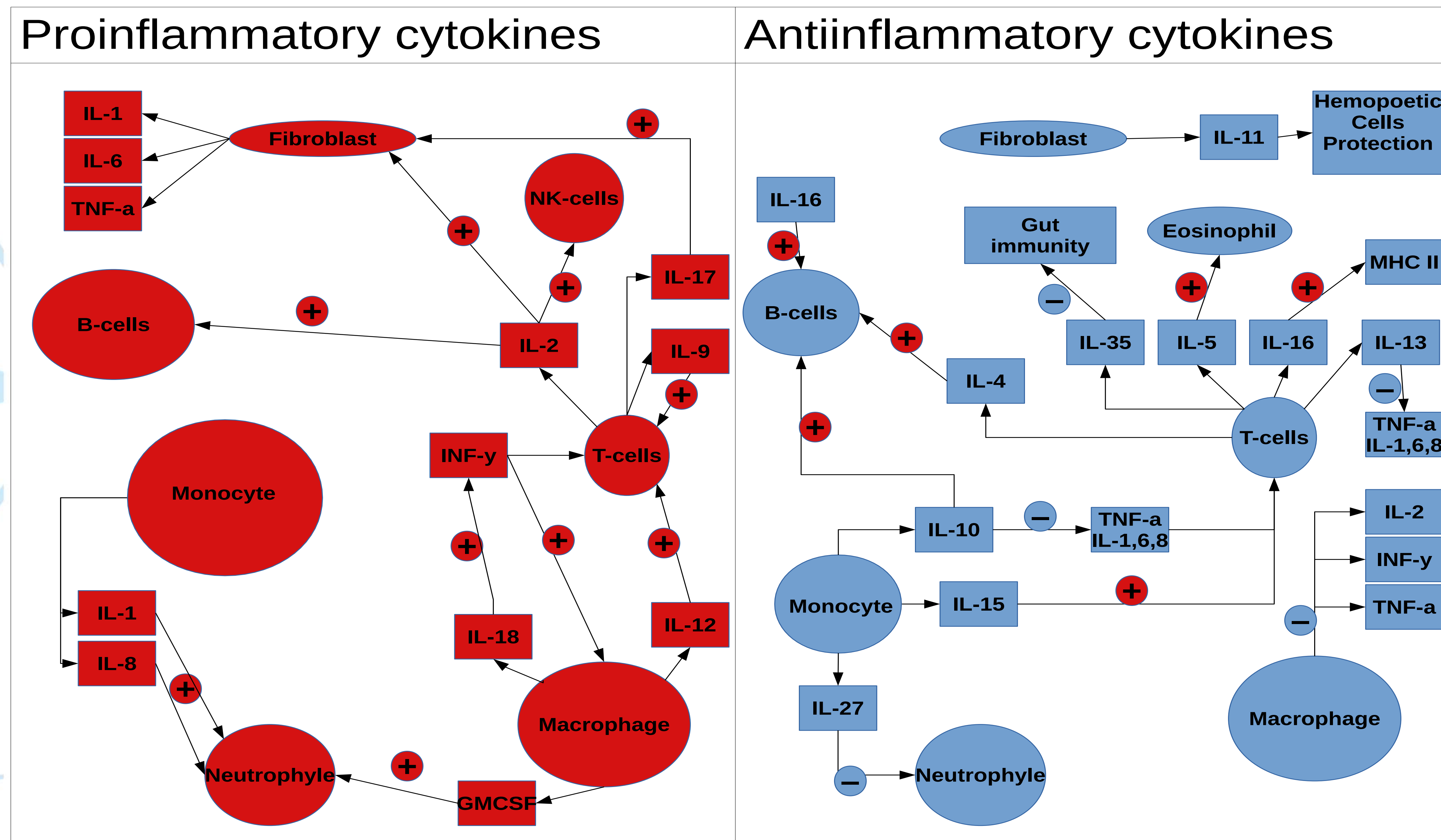


Fig. 1. Scheme of cytokine storm, proinflammatory and antiinflammatory cytokines.

Pathogens	Elevated levels of biomarkers in the blood	Elevated levels of biomarkers in peritoneal fluid
Enterococcus fecalis	IL -12, TNF α , IL-10	INF - γ , IL-6
Candida	IL-17	
Anaerobic infection	TNF α , IL-10	INF- γ
Microbial infection	IL-10	IL-10
Stafilococcus	IL-14	
Zymosan	IL-27	IL-27

Table 1. Interleukin biomarkers in different pathogens

Patients' condition	The level of pro-adrenomodulin in the blood
Healthy	0,4 nmol/L
Patients with SIRS	1,1 nmol/L
Septic patients	1,8 nmol/L
Severe septic patients	2,8 nmol/L
Septic shock	4,5 nmol/L
Which requires norepinephrine	5,5 nmol/L

Table 2. Pro-adrenomodulin levels in function of patients' condition

Conclusion

Evolution of peritonitis depends on the patient's immune status, the trigger mechanisms and the pathogen. The ability to identify levels of cytokines and immune cells is a useful tool in diagnosis of peritoneal sepsis, which can serve as a potential treatment option