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DIAGNOSTIC ROLE OF SOME BIOCHEMICAL MARKERS IN ABDOMINAL SEPSIS

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An increased leukocyte count in the peritoneal fluid, especially neutrophils, over 250/mm³ is a typical laboratory indication indicating bacterial infection in the abdominal cavity. Nevertheless, this is not a reliable indicator of how the illness will turn out. Although bacterial cell culture is a useful technique for diagnosing peritonitis, it has drawbacks such as delayed diagnosis and negative results in 10–60% of cases of spontaneous bacterial peritonitis [Al-Ghamdi H. et al., 2019]. These findings highlight the significance of employing more precise and promising peritonitis diagnostic and prognostic indicators in clinical practice.

Therefore, the identification of microRNA-155 and calprotectin (an acute phase protein that is mainly found in the cytoplasm of neutrophils) in ascitic fluid, as well as an analysis of the blood content of the glycoprotein CD64, which is expressed on macrophages, monocytes, and, in the case of an infectious and inflammatory process, on granulocytes, acquires diagnostic value with regard to the development of bacterial peritonitis, with their combined determination is the most instructive [Nabiel Y. et al., 2019; Vibhash C., 2025]. Due to the potential for early diagnosis and assessment of the degree of inflammation at the local level, an increase in the content of microRNA-223 in the peritoneum, which is primarily produced by neutrophils and monocytes, and a decrease in the level of microRNA-31, which is formed by mesothelial cells and fibroblasts, is a useful predictor of bacterial infection [Brook A.C. et al., 2019].

C-reactive protein and procalcitonin are two of the most crucial preoperative indicators of peritonitis utilised to distinguish established sepsis from systemic inflammatory response syndrome. Conversely, serum amyloid A has significantly higher sensitivity and specificity on the first postoperative day than procalcitonin and C-reactive protein. The diagnostic accuracy of measuring serum amyloid A, procalcitonin, and C-reactive protein rapidly declines in the days that follow surgery [Arbutina D.D., 2022]. It should be mentioned that procalcitonin levels in ascitic fluid and serum did not significantly differ in cases of spontaneous bacterial peritonitis [Lesińska M., 2014]. Yang Sk. (2014) states that measuring blood procalcitonin levels is a more accurate, sensitive, and specific way to diagnose bacterial peritonitis than measuring C-reactive protein concentration [Yang Sk., 2014]. Compared to proinflammatory cytokines IL-2, IL-6, IL-8, and TNF- α , which are also acknowledged as adequate markers and indicators of the development of septic complications [Badiu DC, 2011], procalcitonin is a more informative indicator of the septic state and an early marker of sepsis with a long serum half-life (25–30 hours), making it suitable for daily monitoring of treatment effectiveness [Lesińska M., 2014].

Peritonitis markers can therefore be helpful in evaluating how patients' peritonitis is progressing, assisting doctors in deciding whether to continue treatment or reevaluate it at an early stage of the illness.