

PREDICTIVE ROLE OF BIOMARKERS AND ANTIOXIDANT THERAPY IN ACUTE PANCREATITIS: RESULTS OF A CLINICAL STUDY

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The study evaluates the diagnostic and prognostic value of inflammatory biomarkers and the therapeutic potential of antioxidant therapy in patients with acute pancreatitis (AP). The goal was to improve early disease stratification and reduce the frequency of complications through biomarker-based clinical assessment. Despite advances in intensive care, acute pancreatitis continues to have a high mortality rate (up to 30% in severe cases). Early prediction of severe forms remains challenging. Biomarkers such as interleukin-6 (IL-6), procalcitonin (PCT), and cystatin-C have been proposed as early predictors of systemic inflammatory response and multi-organ failure. Integrating these parameters into clinical algorithms may help optimize treatment strategies and improve prognosis.

Materials and Methods. The study included 74 patients with acute pancreatitis aged 27–69 years (mean age 48.2 ± 3.6). Serum levels of CRP, IL-6, PCT, cystatin-C, and total antioxidant capacity were analyzed within 48 hours of admission. Severity was assessed using BISAP and Ranson scales. Thirty-two patients received additional antioxidant therapy (vitamin C 1 g/day + α -tocopherol 400 mg/day) and early enteral nutrition enriched with glutamine and omega-3 fatty acids.

Results. Severe AP was diagnosed in 21 patients (28.4%). IL-6 and PCT levels within 24 hours of admission were significantly higher in the severe group (IL-6: 94.6 ± 8.3 pg/ml vs. 32.1 ± 4.5 pg/ml; PCT: 3.2 ± 0.6 ng/ml vs. 0.8 ± 0.2 ng/ml; $p < 0.001$). The correlation between IL-6 levels and BISAP scores was $r = 0.71$ ($p < 0.01$). Elevated cystatin-C was associated with renal dysfunction and prolonged hospitalization. Patients receiving antioxidant therapy demonstrated a 1.6-fold faster reduction in CRP levels and a 37% lower incidence of necrotic complications compared to the control group. The average hospital stay was reduced from 14.2 ± 2.1 to 9.3 ± 1.8 days ($p < 0.01$).

Discussion. The obtained data confirm the predictive value of IL-6 and procalcitonin in the early diagnosis of severe AP. The use of antioxidant therapy and early enteral nutrition improves redox balance, reduces systemic inflammation, and accelerates recovery. This supports the inclusion of antioxidant support as an essential component of comprehensive treatment in AP patients.

Conclusions. IL-6, procalcitonin, and cystatin-C are reliable early biomarkers for predicting the severity of acute pancreatitis. Antioxidant therapy combined with early

enteral nutrition reduces the duration of hospital stay and the frequency of systemic complications. The integration of biomarker monitoring into clinical protocols enhances treatment personalization and overall outcomes in pancreatitis management.