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EDİTÖRE MEKTUP LETTER TO THE EDITOR

Recent Insights into Diagnostic Biomarkers and Prognostic Factors in Acute Cholecystitis

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Akut Kolesistitte Tanısal Biyobelirteçler ve Prognostik Faktörlere İlişkin Son Bilgiler

Dear editor,

Acute cholecystitis (AC) is the sudden and severe inflammation of the gallbladder, requiring urgent medical intervention. Biomarkers utilized in the diagnosis of AC are assessed through the patient's clinical presentation, laboratory test results, and imaging techniques. Clinical features include severe pain in the right upper quadrant, fever, nausea and vomiting, jaundice, tenderness, and palpable increased tenderness in the gallbladder area. During physical examination, a positive Murphy's sign may be observed. Laboratory tests may reveal nonspecific findings such as leukocytosis, neutrophilic leukocytosis, elevated CRP, and abnormalities in liver function tests (AST, ALT, total bilirubin, alkaline phosphatase). Additionally, ultrasonography is the most used imaging modality, effectively evaluating findings such as gallbladder stones, wall thickening, and pericholecystic fluid. Imaging techniques like computed tomography and hepatobiliary scintigraphy may also assist in diagnosis. However, imaging findings alone are insufficient for diagnosing cholecystitis and should be evaluated in conjunction with clinical features and laboratory test results (1-3). Early and accurate diagnosis enables patients to receive appropriate treatment and reduces the risk of complications.

The findings of the studies by Çoban et al. and Gül et al. shed light on the diagnostic value and severity assessment of AC (4,5). Çoban et al. observed that patients with higher adhesion scores exhibited significantly lower mean native thiol and total thiol values, while those with normal cholecystectomy had higher averages of these parameters. Additionally, patients who underwent cholecystectomy due to a perforated gallbladder showed elevated disulfide, native thiol/total thiol, and ischemia-modified albumin (IMA) levels. Furthermore, native thiol and total thiol values were negatively correlated with age, operation time, and hospital stay, but positively associated with BMI (4). On the other hand, Gül et al. investigated the utility of IMA in predicting the severity of AC based on the Tokyo guidelines (TG 13). They found that IMA levels were significantly elevated in patients with moderate AC compared to those with mild AC, with a sensitivity of 76% and specificity of 40% at a cutoff value of 84 ng/mL. These results suggest that assessing thiol/disulfide hemostasis and IMA levels could serve as effective methods for preoperative diagnosis and severity assessment of AC, aiding clinicians in decision-making regarding medical treatment, early surgery, and interval surgery (5).

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Visfatin, initially discovered in visceral fat tissue, is a protein hormone found in various tissues of the human body, with particularly high levels observed in the liver, muscle, and intestinal cells. It is believed to possess insulin-like effects and exerts various influences on metabolism (6). Visfatin is thought to play a role in regulating metabolism, energy metabolism, insulin sensitivity, and inflammation processes. However, the exact mechanisms through which visfatin operates and its full scope of action remain to be fully understood. Park et al. investigated serum visfatin levels as a prognostic factor for inflammation severity in AC. They found elevated visfatin levels in AC patients compared to those with chronic cholecystitis, suggesting its potential as an early indicator of inflammation (7). Xie et al. explored the association between plasma visfatin levels and conversion to open surgery in AC patients. They observed significantly higher visfatin levels in all AC patients, particularly in those undergoing conversion, indicating its potential as a predictor for surgical intervention necessity (8). These findings highlight visfatin's role as a marker for inflammation severity and the need for surgical management in AC patients.

In addition to the previous findings on the diagnostic markers of AC, recent studies have investigated the role of Pentraxin 3 (PTX3) as a potential biomarker for disease severity and prognosis. Algın et al. conducted a study involving 60 patients with AC and found significantly elevated levels of PTX3 in patients with gangrenous cholecystitis (GP) and pericholecystic free fluid. They proposed that serum PTX3 levels could serve as a novel biochemical parameter for detecting GP in AC cases, with specific cutoff values showing high sensitivity and specificity (9). Similarly, Aksungur et al. observed increased PTX3 levels in patients with AC, particularly in older patients and those with longer hospital stays. While the differences were not statistically significant in terms of morbidity, the findings suggest that PTX3 may have diagnostic and prognostic value in AC, indicating its potential as an indicator for disease severity and clinical outcomes 810). These studies contribute to the growing body of evidence supporting the utility of PTX3 as a biomarker in the management of AC, providing valuable insights for clinicians in the diagnosis and prognosis of this condition.

In conclusion, the diagnostic and prognostic evaluation of AC is a multifaceted process that involves the integration of clinical presentation, laboratory findings, and imaging techniques. Biomarkers such as PTX3 and visfatin have emerged as promising indicators for disease severity and prognosis, offering potential insights into the management and treatment of AC. The studies reviewed underscore the importance of early and accurate diagnosis in guiding appropriate therapeutic interventions and minimizing the risk of complications. Further research into the utility of biomarkers like PTX3 and visfatin may enhance our understanding of AC pathophysiology and facilitate personalized approaches to patient care. Overall, these findings contribute to the ongoing efforts to optimize diagnostic strategies and improve patient outcomes in the management of AC.

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