

Admission CRP Level as an Indicator for the Need of Percutaneous Cholecystostomy in Acute Cholecystitis

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Abstract

Background: [Text]

Aim: [Text]

Methods: [Text]

Results: [Text]

Conclusion: [Text]

Keywords: Acute cholecystitis; C-Reactive protein (CRP); Percutaneous cholecystostomy; Conservative treatment; Aspirin treatment

Acute calculous cholecystitis is a relatively common complication of gallstone disease, attributed to cystic duct obstruction by gallstones [1]. Patients usually present with right upper quadrant pain and

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Medical data of patients diagnosed with acute cholecystitis in the Tel-Aviv Sourasky Medical Center between January 2007 and March 2014 were retrieved from hospital electronic files. Patients with acalculous cholecystitis or patients who did not have CRP taken at admission were excluded. Patients who were operated on at the index admission were also excluded. Cholecystitis was diagnosed according to the revised Tokyo guidelines [2], i.e., the clinical and laboratory

Male sex was not associated with the need for PC. Importantly, mortality was also higher in patients with PC. Time to admission did not differ between the groups. Proportion of RUQ peritonitis and palpable abdominal mass did not differ between the two groups. However patients who needed PC had higher body temperature.

Mean levels of CRP were significantly higher among patients who underwent PC than among those who were treated conservatively (1128 ± 106 mg/ml and 45 ± 5.3 mg/ml, respectively, $p < 0.001$) (Figure 1A). Mean WBC count did not differ between these two groups of patients (13.8 ± 1 K/mm³ and 12.2 ± 0.5 K/mm³, respectively, $p = 0.15$). Overall aspirin usage was 32%. Even among patients taking aspirin, levels of CRP, but not WBCs were higher among those who underwent PC (107.2 ± 16.7 mg/ml and 43.3 ± 7.9 mg/ml, respectively, $p = 0.04$) (Figure 1B). Here, again, WBC count did not differ between these two groups of patients ($p = 0.51$).

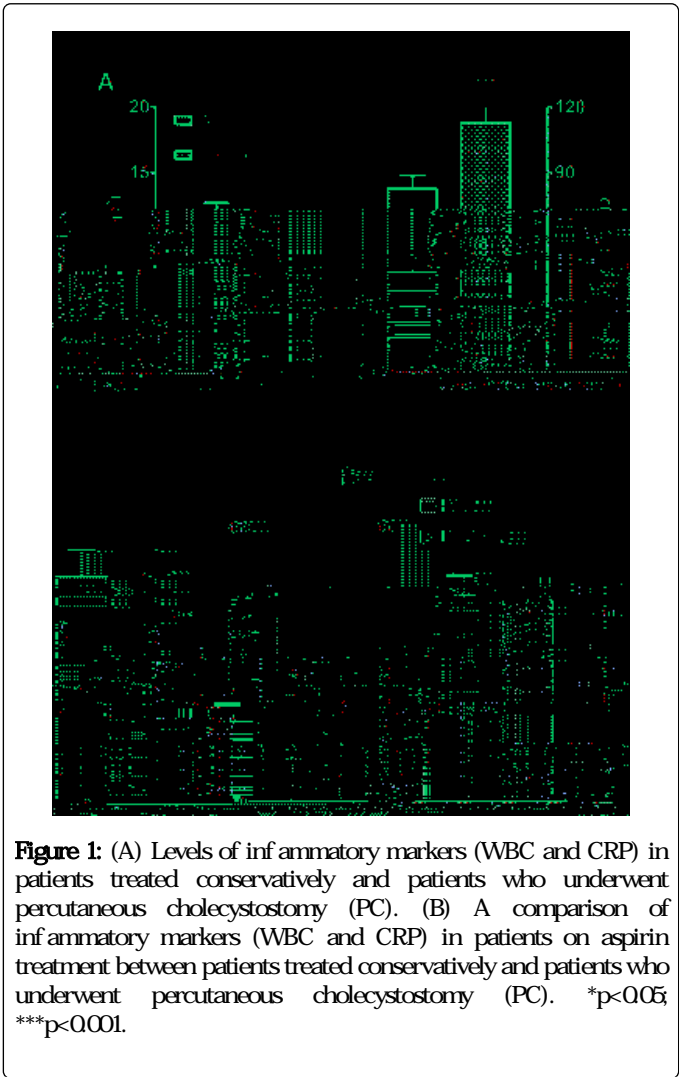


Figure 1: (A) Levels of inflammatory markers (WBC and CRP) in patients treated conservatively and patients who underwent percutaneous cholecystostomy (PC). (B) A comparison of inflammatory markers (WBC and CRP) in patients on aspirin treatment between patients treated conservatively and patients who underwent percutaneous cholecystostomy (PC). * $p < 0.05$; *** $p < 0.001$.

Using receiver operator curve (ROC) for determination of the CRP level where

In this study we demonstrated that increased CRP levels on admission are associated with the need for PC in patients with acute cholecystitis who are not candidates for cholecystectomy. The ability to predict the need for PC on admission can shorten patient suffering, save the time and costs of hospital admissions, and prevent complications resulting from treatment delay.

Similar to findings in other studies, patients who needed PC tended to be older and with higher ASA scores [16,17]. Accordingly, these patients had significantly longer hospital stay. In contrast to other reports [18-20], male sex was not a predictor of cholecystitis severity or of the need for PC in our patient cohort. Time to admission did not differ between groups, implicating that the need for PC is not due to neglected inflammatory process. However, others reported delayed treatment initiation as risk factor to severe cholecystitis [21].

Clinical presentation is also not predictive for the need for PC: although patients who underwent PC had elevated body temperature [17,20], the physical findings of localized RUQ peritonitis or palpable mass did not differ between groups. However, the retrospective design of our study which lacked standardized physical examination, prevent firm conclusions about this issue.

Here we report elevated CRP levels among patients who underwent PC, also among those taking aspirin (about 32% of the cohort). This is important, in light of the down-regulation of CRP production by aspirin previously reported [13]. Our group reported similar findings regarding the presence of complicated diverticulitis in patients taking aspirin [12]. Altogether, we can conclude that although aspirin downregulates CRP production, the pro-inflammatory stimulus exerted by the acute disease overcomes this effect. A CRP level of 47.6 provided the best discriminating value in terms of sensitivity and specificity (73%). The higher the CRP value, the more chance that patient will require PC, with CRP > 120 conferring > 90% for PC. White blood cell count did not differ between those who did and did not undergo PC.

Among other laboratory tests examined in patients referred for PC, bilirubin and albumin also significantly differed between groups. The rise in bilirubin levels was not associated with bile duct obstruction, as implied by

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