

CLINICAL STUDY

The correlation of Procalcitonin serum levels with the presence of biliary obstruction

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Abstract

Introduction: There is still no general agreement as to which patients suffering from attacks of acute biliary pancreatitis should undergo emergent endoscopic retrograde cholangiopancreatography (ERCP) with subsequent endoscopic intervention (endoscopic papilotomy, stent placement etc.). Many authors have described large differences in Procalcitonin (PCT) serum levels in patients suffering from biliary pancreatitis as opposed to patients whose acute pancreatitis is based on toxic etiology. Therefore, we have investigated the correlation of Procalcitonin serum levels with the presence of biliary obstruction in patients undergoing ERCP examination.

Material and methods: From 1.8.2004 to 31.3.2005, 97 patients undergoing ERCP were enrolled into the study. Blood samples were taken from each patient just before their ERCP examinations, and PCT serum levels were subsequently correlated to ERCP findings.

Results: ERCP examinations were completed in 90 out of 97 patients. Bile ducts obstructions were confirmed in 61 out of 90 patients and the mean serum level of PCT was 0.078 ng/ml. In the remaining 29 patients ERCP revealed normal findings and the mean PCT value was 0.069 ng/ml. There was no statistical correlation between PCT serum levels and the presence of biliary obstruction on ERCP findings.

Conclusion: The measurement of PCT serum levels is of no help in the identification of patients, who should undergo emergent ERCP due to acute biliary pancreatitis (Tab. 1, Fig. 1, Ref. 6).

Key words: acute pancreatitis, procalcitonin, ERCP.

There are two important and most common causes of acute pancreatitis. In the treatment of this disease, it is a crucial issue to distinguish whether the particular case has a toxic or biliary etiology. An early identification of patients with biliary obstructions is of supreme clinical value, as the restoration of biliary patency by emergent ERCP with subsequent endoscopic intervention is the principal goal of the treatment. So far, no general agreement has been established as to which patients suffering from acute biliary pancreatitis should undergo emergent ERCP, since the percentage of negative ERCP is still high. Furthermore, there is also the risk of complications arising from ERCP examination, the fact of which should be considered when indicating this intervention. The authors of Brunckhorst's paper published in 1998 (1) found good correlations of elevated PCT serum levels in patients with positive ERCP findings. As the number of patients included into their study was low, we decided to conduct a study investigating the correlation of PCT serum levels

with ERCP findings in patients undergoing ERCP examinations, all based on the hypothesis that the latter correlation might be a useful marker in the indication of the emergency to perform ERCP in patients suffering from acute biliary pancreatitis.

Material and methods

From 1.8.2004 to 31.3.2005, 97 patients undergoing ERCP at the Department of Digestive Endoscopy of the University Hospital – in Bratislava, were enrolled into the study. PCT was mea-

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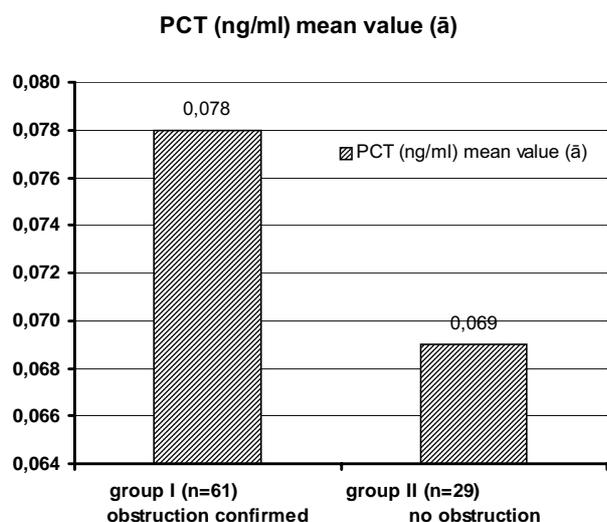


Fig. 1. PCT mean values.

sured in blood samples taken from each patient just before ERCP examination. The method of chemilluminescent (BRAHMS Diagnostica, Germany) was used in PCT measurement. ERCP examinations were performed by skilled endoscopists and have been successfully completed in 90 out of 97 patients. According to ERCP findings, the patients were divided into two groups. Patients with confirmed biliary obstruction on ERCP were included into group I and those with no obstruction were in group II. PCT levels were correlated between the groups. The results are given as the mean values and sensitivity and specificity of PCT, which are of value in the identification of cases with biliary obstructions.

Results

ERCP has been successfully done in 90 patients (success rate of 92 %). There were no ERCP complications. In 61 out of 90 patients obstructions were confirmed (group I, n=61) and in the remaining 29 out of 90 patients, ERCP revealed no obstructions on cholangiograms obtained (group II, n=29). Mean values of PTC serum in both groups were almost equal (group I – \bar{a} =0.078 and group II – \bar{a} =0.069) (Fig. 1), with very low sensitivity to PCT (SE=4.9 %) (Tab. 1).

Discussion

Several studies dealing with indications of emergent ERCP in acute biliary pancreatitis have been published (2, 3, 4, 5).

Tab. 1. Statistical values for correlation of PTC with the presence of biliary obstruction.

n=9	Sensitivity (%)	Specificity (%)	PPH (%)	NPH (%)
PCT >0.5 ng/ml	4.9	93.0	60.0	31.0

According to the results of these studies, we are still not able to provide evidence-based recommendations for establishing the ERCP indication in cases with acute biliary pancreatitis (4). Currently, there is a common agreement that emergent ERCP is indicated in severe attacks with acute cholangitis as well as in patients with obstructive jaundice (4). It is still not clear as to whether there is an indication in severe pancreatitis with no cholangitis or no jaundice. Despite the fact that we have relied on these indications, negative ERCP examinations in our previous study had been revealed in more than 50 % (6). The author of Brunkhorst's paper published in 1998 found the difference in PCT levels in a group of patients with positive ERCP findings (n=24) in comparison to the group of patients with negative ERCP findings (n=10). Furthermore he found this difference to be statistically significant ($p<0.01$). Unfortunately, in our study we did not confirm this correlation, as the PCT mean levels were equal in both groups of patients, i.e. in those with negative as well as in those with positive ERCP findings. According to our results we cannot recommend the use of PCT as a useful marker in establishing the indication of emergent ERCP in acute biliary pancreatitis because there is no correlation with the biliary obstruction at all.

Conclusion

Although we consider PCT as a good marker for monitoring the inflammatory response as well as a good prognostic marker in acute pancreatitis, we do not recommend its use in the indication of emergent ERCP in acute biliary pancreatitis, because there is no correlation with the presence of biliary obstruction.

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