

Biochemical characteristics and radiological findings in patients with acute pancreatitis hospitalized at “Mother Teresa” University Hospital Centre in Tirana during 2011-2013

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Abstract

Aim: The aim of this study was to compare laboratory and radiological findings between two groups of patients with acute pancreatitis (alcoholic group vs. biliary group) hospitalized in Tirana, the capital of Albania.

Methods: This was a case-series study which was carried out at the University Hospital Centre “Mother Teresa” in Tirana during the period January 2011 – January 2013 and included all patients with acute pancreatitis (N=112) hospitalized at the Gastroenterology Clinic. Information on demographic factors, clinical characteristics of the patients, laboratory test and radiological examinations was obtained for each patient. T-test and chi-square test were used to compare potential differences in numerical and categorical variables, respectively, between two patient groups (alcoholic group [n=40] vs. biliary group [n=72]).

Results: Hemoglobin and hematocrit levels were higher in patients pertinent to the alcohol group compared to the biliary group (P=0.01 for both). Similarly, lipase level was higher in the alcoholic group (P=0.01). Conversely, AST and ALT were higher in the biliary group (P=0.01 for both). The proportion of patients with levels of amylase and lipase above the normal levels was higher in patients of the alcohol group, but these differences were not statistically significant (P=0.31 and P=0.28, respectively). Presence of pseudocysts was noted in 15 (13.4%) of the patients, whereas abscess in none of the patients. There was a significant difference in the necrotic lesions by alcohol consumption (P=0.001).

Conclusion: This may be the first report informing about the distribution of biochemical characteristics and radiological findings in Albanian patients hospitalized with alcoholic and biliary acute pancreatitis.

Keywords: acute pancreatitis, alcoholic pancreatitis, biliary pancreatitis, biochemistry, radiology.

Introduction

Acute pancreatitis is a common disease with an incidence of 5-80 cases per 100,000 individuals, and its incidence is increasing in the recent years (1-3). Alcohol plays a major role in the etiology of acute pancreatitis, although multiple factors are involved in the occurrence of this condition (3,4). Differentiation of various etiologies of acute pancreatitis has a great importance for its proper identification, correct treatment and prevention strategies.

There have been differing reports with regard to whether etiologic factors affect clinical outcome and mortality of acute pancreatitis. Various studies have reported that biliary acute pancreatitis is more severe and is associated with a higher mortality rate than the alcoholic type of acute pancreatitis (5,6). A few investigators have reported a higher level of complications and a higher mortality rate in patients with alcoholic acute pancreatitis (7,8), whereas some studies have indicated no significant difference in this regard (9-11).

In Albania, there are no reports about the etiology of acute pancreatitis to date. Hence, it is important to describe this important condition in this transitional population characterized by a rapid increase in the prevalence of heavy alcohol consumption, among other deleterious health behaviors. In this framework, the aim of this study was to describe the biochemical and imaging data in a group of patients with acute pancreatitis hospitalized at the University Hospital Centre in Tirana. More specifically, the objectives of this study included description of the patients suffering from acute pancreatitis by socio-demographic characteristics (age and sex) and lifestyle factors (alcohol consumption); description of the differences in diagnostic characteristics and laboratory data between the alcohol group and the biliary group; and differences in prognostic characteristics between the alcoholic group and the biliary group.

Methods

Study participants included patients with acute pancreatitis hospitalized at the University Hospital Center "Mother Teresa" in Tirana during the period January 2011 – January 2013. Within this time period, there were 112 patients diagnosed and hospitalized with acute pancreatitis in this centre which is the only tertiary facility in Albania.

The inclusion criteria of study participants (patients diagnosed with acute pancreatitis) consisted of the following characteristics:

- Abdominal pain (acute, strong, epigastric pain);
- Lipase at least three times more than the higher limit of the normal values;
- Specific findings and evidence from radiologic examinations.

Patients exhibiting at least two of the aforementioned characteristics were classified as acute pancreatitis cases and were included in this study, as recommended in the international literature (12,13).

The biliary etiology was determined after radiological examinations, whereas the alcoholic etiology was considered after excluding the biliary origin and the presence of heavy alcohol consumption in the last days preceding the hospitalization, or chronic alcohol consumption with heavy alcohol intake in the last days. Hence, the type of acute pancreatitis (alcoholic, or biliary) was determined based on the history of alcohol consumption of the patients.

The patient was considered recovered when the biochemical parameters were normalized and he/she could leave the hospital.

Socio-demographic characteristics included age and sex which were drawn from the medical charts of each patient. The values of the following parameters were obtained from laboratory examinations: hemoglobin, hematocrit, AST, ALT, Amylase, Lipase, GGT, FA, red blood cells, white blood cells, uremia, creatininemia, triglycerides, and cholesterol. Duration of hospitalization was obtained from medical charts.

The history of alcohol consumption was based on patients' self-reports upon administration of a standardized questionnaire.

The data were entered in Microsoft Excel program. Subsequently, the data analysis was conducted in SPSS (Statistical Package for Social Sciences, version 20.0). Mean values and their respective standard deviations were calculated for the continuous variables. Student's t-test was used to compare mean differences of the continuous variables between two patient groups (alcoholic group vs. biliary group). Lipase and amylase were transformed into categorical variables by using cut-offs of these variables (normal vs. above normal values). Categorical variables were expressed as numbers and proportions. Chi-square test was used to compare the distribution of the categorical variables between two groups (alcoholic vs. biliary group). Odds ratios (ORs) and their respective 95% confidence intervals (95%CI) were calculated to

compare the proportions of radiological findings between the two groups (alcoholic vs. biliary group).

Results

From January 2011 to January 2013 there were admitted 112 patients suffering from acute pancreatitis at the Gastroenterology-Hepatology Service of the University Hospital Center "Mother Teresa" in Tirana. Of these 112 patients, 40 (35.7%) were considered as alcohol users (referred to as the alcoholic group), and 72 (64.3%) were considered as non-alcohol users (biliary group).

Mean age of the 112 patients diagnosed with acute pancreatitis was 53.6 ± 13.9 years (range: 19-87 years). Patients of the alcoholic group were significantly younger than their counterparts from the biliary group ($P=0.021$, Table 1). Furthermore, all of the alcohol users were males as compared with only 38% of the patients in the biliary group ($P=0.001$).

Table 1. Distribution of demographic characteristics in study participants

VARIABLE	Alcoholic group (N=40)	Biliary group (N=72)	P-value
Age (mean $\pm$ SD)	50.1 $\pm$ 9.1 years	55.6 $\pm$ 15.8 years	0.021
Male proportion	40 (100%)	27 (37.5%)	0.001

Table 2 presents the distribution of laboratory findings by etiology of acute pancreatitis. Hemoglobin and hematocrit levels were higher in patients pertinent to the alcohol group compared to the biliary group ($P=0.01$ for both). On the other hand, AST and ALT were higher in the biliary group ($P=0.01$ for both). In addition, the amylase level was higher in the biliary group (a finding, however, without statistical significance: $P=0.09$). Conversely, lipase level was higher in the alcoholic group ($P=0.01$). There were no significant differences between groups regarding the distribution of white blood cells, red blood cells, uremia, creatinemia, triglycerides and cholesterol levels (Table 2).

The proportion of patients with levels of amylase and lipase above the normal levels was higher in patients

of the alcohol group (Table 3), but these differences were not statistically significant ($P=0.31$ and $P=0.28$, respectively).

Presence of severe forms was classified based on radiological data, especially for the local complications (Table 4). Presence of pseudocysts was noted in 15 (13.4%) of the patients, and abscess in none of the patients. There was a significant difference in the necrotic lesions by alcohol consumption ($P=0.001$). The odds ratio for the presence of necrotic lesions in the alcoholic group compared to the biliary group was $OR=18.7$ ($95\%CI=2.2-839.7$).

Patients were considered recovered when the biochemical parameters were normalized and they could leave the hospital. Overall, mean hospitali-

zation duration was 13.4±9.1 days (range: 4-44 days). There was no significant difference in the duration of hospitalization between the two groups (P=0.56, not shown in the tables).

Table 2. Comparison of laboratory data according to the etiology of acute pancreatitis

Laboratory findings (mean±SD)	Alcoholic group (N=40)	Biliary group (N=72)	P-value
Hemoglobin (g/dl)	14.4±1.9	12.8±1.9	0.01
Hematocrit (%)	42.6±6.2	38.5±5.5	0.01
Creatinine (mg/dl)	1.0±0.5	0.9±0.3	0.13
AST (IU/L)	105.4	211.7	0.05
ALT (IU/L)	74.4	226.3	0.05
GGT	277.0	187.3	0.018
FA	112.4	185.4	0.05
Bilirubin	1.8	2.5	0.05
Lipase/Amylase	1.25	<1	0.02
RBC	4,500,000±600,000	5,600,000±600,000	0.46
WBC	10,500±7,500	12,600±5,400	0.13
Uremia	32.4±19.6	38.4±29.0	0.25
Creatinemia	1.0±0.5	0.9±0.3	0.13
Triglycerides	179.4±160.4	201.2±438.6	0.78
Cholesterol	174.1±65.9	172.4±50.1	0.89

Table 3. Levels of amilase and lipase by etiology of acute pancreatitis

PARAMETER	Alcoholic group	Biliary group	Total	P-value
Amylase:				
Normal value	5 (12.5%)	16 (22.2%)	21 (18.8%)	0.31
Above the normal value	35 (87.5%)	56 (77.8%)	91 (81.2%)	
Lipase:				
Normal value	9 (22.5%)	24 (33.3%)	33 (29.5%)	0.28
Above the normal value	31 (77.5%)	48 (66.7%)	79 (70.5%)	

Table 4. Distribution of complications by etiology of acute pancreatitis

GROUP	Necrotic lesions			OR	95% CI	P
	With	Without	Total			
Biliary group	1 (1.4%)	70 (98.6%)	71 (100.0%)	1.0	Reference	0.001
Alcoholic group	8 (21.1%)	30 (78.9%)	38 (100.0%)	18.7	2.2-839.7	
GROUP	Pseudocysts			OR	95% CI	P
	With	Without	Total			
Biliary group	8 (53.3%)	63 (67.0%)	71 (65.1%)	1.0	Reference	0.38
Alcoholic group	7 (46.7%)	31 (33.0%)	38 (34.9%)	1.8	0.2-2.0	
GROUP	Abscess			OR	95% CI	P
	Yes	No	Total			
Biliary group	0	71 (100.0%)	71 (100.0%)	-	-	-
Alcoholic group	0	38 (100.0%)	38 (100.0%)	-	-	

Discussion

According to the international literature, several studies have shown that alcohol causes acute pancreatitis (10). Our study findings show that 35.7% of the patients suffering from acute pancreatitis have a history of alcohol consumption (suggesting that alcohol may be a cause for 35.7% of the cases of acute pancreatitis).

Other findings show that acute pancreatitis caused by alcohol is more predominant in males and in younger patients (4,14). Similar to this evidence, in our study there was a significant difference between the two groups differentiated by the presence of alcohol consumption, where this behavioral characteristic was considerably more predominant in males ($P=0.001$) and in younger ages ($P=0.02$). Different studies have indicated that levels of amylase and lipase are lower in alcoholic patients (6,14). In our study, levels of amylase and lipase were higher in the alcoholic group. However, these differences were not statistically significant ($P=0.31$ and $P=0.28$, respectively).

Increased levels of hemoglobin and hematocrit are used as effective predictive factors of necrotizing acute pancreatitis (15,16). In our study, levels of hemoglobin and hematocrit were significantly higher in the alcoholic group ($P=0.01$ for both), suggesting

that in the alcoholic group there is a hint for the presence of necrotic pancreatitis. These findings were confirmed by radiological data, with evidence of a significant difference in the distribution of necrotic lesions ($P=0.001$). On the other hand, renal failure exhibited a similar distribution in both groups, with no significant difference ($P=0.17$).

Mean of duration of hospitalization was similar in the alcoholic and biliary groups, suggesting that the time needed for recovery is the same in both groups of acute pancreatitis patients.

This study has its limitations. First, the number of the patients included in this study was relatively small compared with other studies including acute pancreatitis cases. In addition, there were several severe cases that were transferred to the Gastroenterology-Hepatology Service at the University Hospital Center "Mother Teresa" in Tirana from other districts of Albania. From this point of view, some patients included in this study may consist of selective cases, not necessarily representative of the overall patients with acute pancreatitis in Albania. Notwithstanding these potential limitations, this may be the first report informing about the distribution of biochemical characteristics and radiological findings in Albanian patients hospitalized with alcoholic and biliary acute pancreatitis.

Conflicts of interest: None declared.

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