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Medical Sciences

BIOCHEMICAL PARAMETERS IN ACUTE PANCREATITIS

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ABSTRACT:
BACKGROUND
ACUTE PANCREATITIS REPRESENT AN INFLAMMATORY DISEASE WITH DIFFERENT GRADES OF SEVERITY, RANGING FROM MILD TO SEVERE PRESENTATIONS.THERE ARE A LOT OF BIOMARKERS USED IN DIAGNOSIS AND PROGNOSIS OF ACUTE PANCREATITIS.
OUR AIM WAS TO EVALUATE DIFFERENT BIOCHEMICAL PARAMETERS AT TWO MOMENTS OF PANCREATITIS:ADMISSION AND DISCHARGE.
METHOD:WE INCLUDED 100 PATIENTS.ALL THE PATIENTS WERE EVALUATED AT ADMISSION AND DISCHARGE.DATA ON BIOCHEMICAL PARAMETERS SUCH AS AMYLASE, LYPASE WERE COLLECTED.
RESULTS:WE HAVE OBTAINED SIMILAR RESULTS LIKE IN THE STUDIES FROM LITERATURE REGARDING DIAGNOSIS OF ACUTE PANCREATITIS USING AMYLASE, LIPASE, LEUKOCYTES, BILIRUBIN, LACTATE DEHIDROGENASE.

KEY WORDS: AMYLASE, LIPASE, ACUTE PANCREATITIS

INTRODUCTION

Acute pancreatitis is a common inflammatory disease which can vary from mild to severe presentation .[8].Early predictors of establishing the severity of the disease are lack[9].

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Diagnosis of acute pancreatitis can be clinical by abdominal pain, biochemical by serum enzymes such as amylase, lipase and morphological alterations by abdominal ultrasound, computed tomography.[10]

There are a lot of causes of acute pancreatitis, but the most two important are gallstones and alcohol.[11],[12]. For a good diagnosis there is necessary to have at least 2 of 3 criteria, such as abdominal pain, high levels of serum enzymes (amylase,lypase) and imagistic features.

To predict the severity of the disease , clinical signs, laboratory markers and imagistic tests have to be taken into account. Both lipase and amylase alone don't have the ability to diagnose and predict the severity of the disease.[13]Although the sensitivity and specificity of the amylase aren't so high, the enzyme is widely used in clinical practice.[14],[15],[16].

A cut -off of three folds of the upper limit of reference has increase the sensitivity and specificity of both amylase and lipase tests in diagnosis of acute pancreatitis.[17],[18],[19],[20]

The aim of the study was to compare the values of different biochemical parameters used in diagnosis of acute pancreatitis at admission and discharge.

MATERIALS AND METHODS

Our study included 100 patients who was admitted at the Department of Gastroenterology with acute pancreatitis.

Laboratory tests (including the complete blood count, total cholesterol, transaminases, bilirubin, alkaline phosphatase levels) were performed to all the patients after a clinical examination.We measured two values at different moments (admission and discharge) at the same patients.

The results were presented as mean±standard deviation for numeric variables and as absolute numbers and percentage for categorical variables, using Shapiro Wilk test. Statistical

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analysis was performed by using R programming soft, version 3.5.3. (2019-03-11) Copyright (C) 2019. The statistical significance was considered for a p value <0.05.

Patients'characteristics are summarized in table 1 (baseline characteristics) and table 2 (laboratory parameters).

RESULTS

The baseline characteristics of the study patients are presented in Table 1. The mean age was 58.07±15.10 years with male predominance (65% of the patients).

The majority patients were from the urban environment.

We represent the values of number of leukocytes, thrombocytes, haemoglobin, cholesterol, triglycerides, transaminases, bilirubin, alkaline phosphatase (see Table 2).

We compare the values of amylase,lipase, leukocytes,bilirubin, lactate dehidrogenase at admission and discharge.(table 3,4,5,6 and 7).

Table 1.Baseline characteristics

Patient characteristics	**No = 100**
Age – Mean ± S.D	58.07 ± 15.10
Sex M – No. (%)	65 (65.00)
F – No. (%)	35 (35.00)
Residency City – No. (%)	75 (75.00)
Rural – No. (%)	25 (25.00)

Table 2. Laboratory parameters

Leukocytes – Mean (IQR)	10855.00 (7600.00)
Trombocytes – Mean ± S.D	268450 ± 114454
Lymphocytes – Mean ± S.D	1355.00 ± 581.33
Granulocytes – Mean ± S.D	9481.70 ± 4995.70
Basophil – Mean (IQR)	65.00 (205.00)
Monocytes – Mean (IQR)	800.00 (580.00)
RDW – Mean ± S.D	34.92 ± 15.36
Hb – Mean ± S.D	13.83 ± 2.18
Cholesterol – Mean ± S.D	181.44 ± 73.38
TGL – Mean (IQR)	100.50 (51.00)
AST – Mean (IQR)	40.50 (85.00)
ALT – Mean (IQR)	34.00 (112.00)
TB – Mean ± S.D	1.51 ± 1.49
DB – Mean ± S.D	0.62 ± 0.94
AF – Mean (IQR)	92.00 (97.00)
GGT – Mean (IQR)	148.50 (395.00)

Table 3. The distribution of amylase

Amylase	Admission	Discharge
Mean ± S.D	649.52 ± 660.03	110.44 ± 98.99
Mediana (IQR)	446.50 (681.50)	84.00 (70.00)
Min to Max	29.00 la 3112.00	31.00 la 664.00
Skewness	1.50	3.08

Mean Admission	Mean discharge	P value	Mean difference[IC95%]
649.52	110.44	< 0.0001	547.89 [408.90 la 686.88]

Table 4.The distribution of lipase

Lipase	Admission	Discharge
Mean ± S.D.	1423.24 ± 1888.62	129.10 ± 152.65
Mediana (IQR)	586.00 (1679.00)	76.00 (95.00)
Min to Max	3.00 la 9110.00	4.00 la 902.00
Skewness	1.96	3.09

Mean Admission	Mean Discharge	P value	Mean difference [IC95%]
1423.24	129.10	< 0.0001	1273.83 [883.46 la 1664.19]

Table 5.Distribution of leukocytes

Leukocytes	Admission	Discharge
Mean ± S.D	11.85 ± 5.30	8.30 ± 3.20
Mediana (IQR)	10.76 (7.62)	7.56 (3.70)
Min to Max	3.40 la 28.92	2.20 la 18.42
Skewness	0.95	1.07

Medie Admisie	Medie Externare	Valoare p	Medie Diferente[IC95%]
11.85	8.30	< 0.0001	3.55 [3.10 la 5.15]

Table 6.Distribution of lactate dehydrogenase

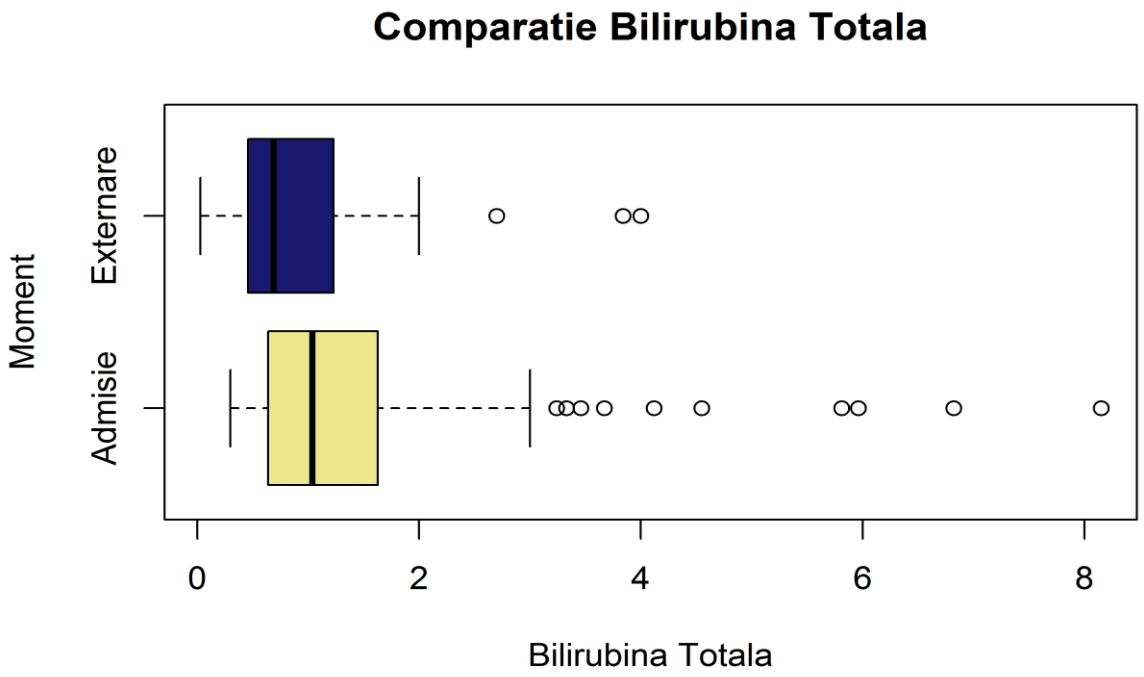
LDH	Admission	discharge
Mean ± D.S	324.66 ± 229.03	212.82 ± 116.48
Mediana (IQR)	282.00 (191.00)	189.50 (179.50)
Min la Max	75.00 la 1221.00	0.26 la 448.00

Mean Admission	Mean discharge	P value	Mean difference [IC95%]
324.66	212.82	0.0260	111.84 [24.02 la 327.31]

Table 7.Distribution of total bilirubin

Total bilirubin			**Admission**	**Discharge**
Medie ± D.S			1.51 ± 1.49	0.97 ± 0.86
Mediana (IQR)			1.04 (1.00)	0.69 (0.77)
Min la Max	**0.30 la 8.15**	**0.03 la 4.00**		
Skewness	2.35	2.02		

Mean Admission	Mean discharge	P value	Mean difference[IC95%]
1.51	0.97	< 0.0001	0.54 [0.35 la 0.81]



DISCUSSION

In our study we evaluate different values of some biochemical markers at the same patient in two moments:admission and discharge.

In the literature, the importance of lipase is more than of amylase, this one being preffered in diagnosis of hyperlipidemic acute pancreatitis.[21],[22].

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Some studies showed that lipase test is better in diagnosis of alcoholic pancreatitis than amylase test.[23],[24].

The results of our study were similar to other studies. The value of amylase recorded at admission decrease at discharge with a significant statistical value of p <0.0001.We obtained also a statistical significance with a p value <0.0001 regarding the value of the lipase in two different moments:at admission with a high level and at discharge with a low ,even normal level.

Other biochemical markers such as bilirubin and number of leukocytes were measured at admission and at discharge and we have noticed the decreasing of the value for both of them with a statistical signifigance of p value <0.0001.

We can concluded that these common biochemical parameters such as amylase, lipase,leukocytes, bilirubin have a real value in diagnosis of acute pancreatitis.

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All authors equally contributed of the research of this paper.

All authors report no potential conflict of interest.

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