EVALUATION AND COMPARISON OF HEMATOLOGICAL PARAMETERS OF BLEEDING AMONG VARIOUS CLASSES OF CIRRHOTIC PATIENTS AT ISRA UNIVERSITY HOSPITAL

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Abstract:
Liver cirrhosis is a major complication of chronic liver diseases leading to ascites and upper GI bleeding this study was designed to assess the biochemical parameters associated with bleeding tendencies. Cirrhotic patients were included in the research by purposive sampling; blood was drawn under aseptic protocols. Serum was analyzed in Isra University hospital lab for PT, aPTT, fibrinogen level, platelet count and D-Dimer. Significant difference was observed between the three child pugh classes (A,BC) for prothrombin time P- 0.000821,Activated prothrombin time P-0.000639 serum fibrinogen p- 0.000824 and serum platelet count P- 0.000191 and there was significant difference between the serums D-Dimer Level as well with P- value 0.0193
Conclusion: There exists significant difference between the serum biomarkers among three child pugh classes of cirrhosis.
Key Words: *PT, aPTT, Fibrinogen, D-dimer, Platelets.*

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INTRODUCTION:

Cirrhotic liver mortality is 4th common most death cause in Europe (170,000 deaths/year) and14th round the globe (1.03 million deaths/Year) [1,2]. The 1-year mortality of liver cirrhosis varies greatly from 1% to 57% according to the complications. Child -Pugh score used in the assessing the liver dysfunction severity in clinical practice was developed by Child and Turcotte which includes albumin ascites, ,total bilirubin, hepatic encephalopathy, PT (prothrombin time) or INR (international normalized ratio) [3].Portal hypertension develops in consequence of cirrhosis leading to esophageal varices which is lethal[4,5].Acute variceal bleeding occurs in 70% of cirrhotic patients and is a main cause of death in these patients[6]. Mortality associated with 1st episode of bleeding ranges from 15–20% and goes up to 30% in case of Child Pugh class C while Class A (compensated cirrhosis) has low mortality rates [7]. Mortality rate due to varices has fallen due to better prognosis in recent times following Baveno VI expert consensus recommendations with significant improvements in management [8,9].The current work was designed to assess the various bio chemical parameters responsible for bleeding(PT,APTT, Platelet count, D-dimer and fibrinogen levels comparison was made between cirrhotic patients of various classes (Child-Pugh A,BC) of cirrhosis.

METHODOLOGY:

Diagnosed patients (64) of liver cirrhosis of all etiologies irrespective of sex, age, and socio-economic values were included while patients with Known abnormal Coagulation profile , patients on oral contraceptive, heparin, warfarin and aspirin were excluded along with non- Cirrhotic liver patients and Pregnant women. Patients were divided into three groups on the basis of child-pugh classification. With 11 patients in class A,26 patients of class B and 27 patients of class C. Venous blood (5ml) was drawn from each patient under high precautions and placed in separate bottles. PT (Plasma prothrombin time) and APTT (Activated partial thromboplastin time) were measured using CA-50 sysmex machine. Automatic Coagulation analyzer was used to assess Plasma fibrinogen level while COBAS H232 was used for the estimation of serum D-dimer (Fibrin degradation products). CBC analyzer was used to determine Platelet count in the study population.

RESULTS:

There were 64 cirrhotic patients PT was noted 11.09 ± 0 .831 Seconds in 11 patients belonging to Class A while it was 12.15 ± 2.838 seconds in Class B and Class C patients were having PT of 16.66 ± 2.541 seconds which was statistically highly significant (P-value .000821). APTT was recorded as27.09 ± 4.657 Seconds in class A, 33.50 ± 2.284 seconds in Class B and 35.62 ± 1.779 seconds in Class C patients and the difference was highly significant with P-value 0.000639. Serum Fibrinogen Level was 333.90 ± 45.007 mg/dl in Class A patients,   261.07   ± 70.622mg/dl in class B while it was 207.33 ± 38.484 mg/dl in class C with a P-value of 0.000824 that is statistically highly significant. Serum D-Dimer level was 195.45 ± 13.633 ug/L in child pugh class A patients , 212.96 ± 37.845 ug/L in class B patients and it was noted to be 234.14 ± 47.287 ug/L in child pugh class C that was also significant p-value 0.0193. Platelet Count in patients of child pugh class A was 375.36 ± 39.479(X thousands/uL) in   class   B platelets were 343.30 ± 58.793(X thousands/uL) while the same were 277.03 ± 55.061(X thousands/uL) in patients of class C with a highly significant P-value 0.000191.

Table#1. ANOVA of the study variables

S. No	Parameter	Class- A n = 11	Class- B n = 26	Class- C n =27	F-Value	P-Value
1.	PT (Seconds)	11.09 ± 0 .831	12.15 ± 2.838	16.66 ± 2.541	25.65	0.000821
2.	APTT (Seconds)	27.09 ± 4.657	33.50 ± 2.284	35.62 ± 1.779	40.51	0.000639
3.	Fibrinogen Level (mg/dl)	333.90 ± 45.007	261.07 ± 70.622	207.33 ± 38.484	21.56	0.000824
4.	D-Dimer Level (ug/L)	195.45 ± 13.633	212.96 ± 37.845	234.14 ± 47.287	4.21	0.0193
5.	Platelet Count (X thousands/uL)	375.36 ± 39.479	343.30 ± 58.793	277.03 ± 55.061	16.47	0.000191

Gender distribution
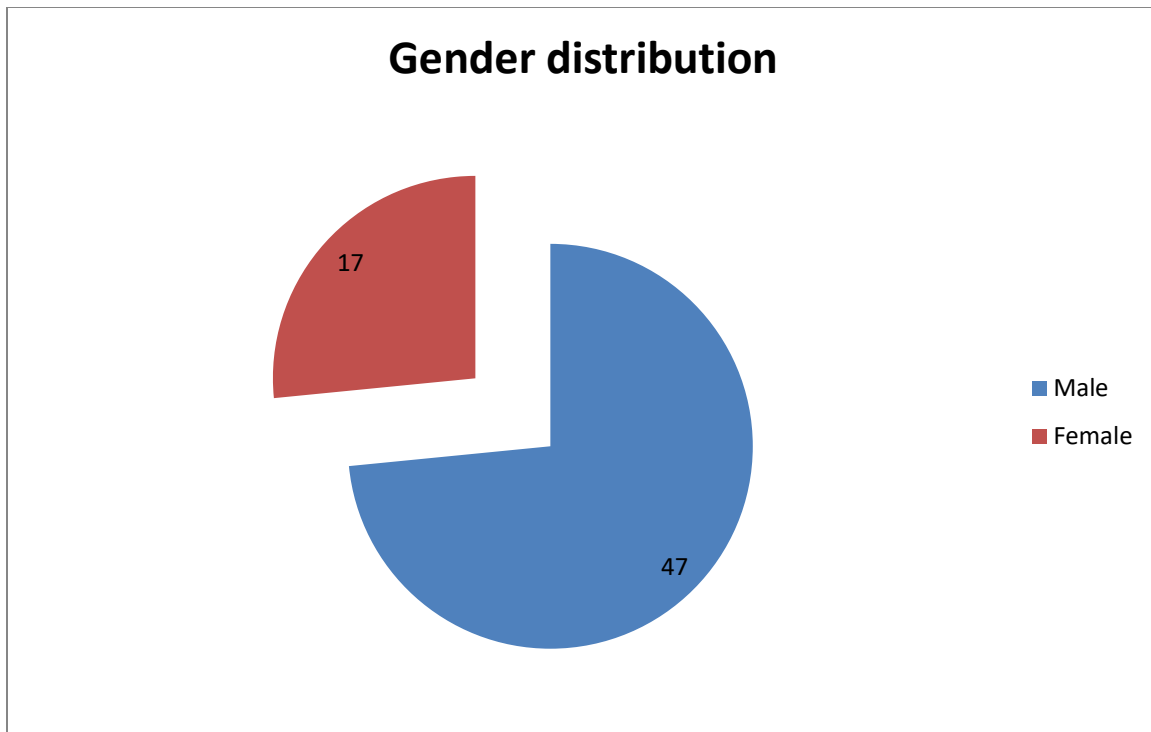
Fig#1. Pie chart showing Gender distribution of study subjects

DISCUSSION:

We found significant reduction in mean platelet count from Child-pugh class A to class C consistent to findings of Senzolo M , et al (2012)[10]. However their findings were generalized to cirrhosis but not co-related to Child Pugh class.Serum Mean levels of D-dimer were found elevated to a significant extent from Child-pugh class A - C Similar consistent findings were published by Essawy F et al. (2008) and zhang D Lei, et al.(2013) possibly due to deterioration in the liver functions [11,12].Mean of PT (Prothrombin Time) was noted to be significantly increased from Child-Pugh class A to child-pugh class C patients consistent Massimo P et al.(2010) [13].Senzolo M, et al.(2012) reported reduction in PT from class A to class C which is inconsistent to our findings. Our results regarding aPTT mean levels were increase from Child-Pugh class A- C that was in accordance to Senzolo M, et al. (2012). Mean of Fibrinogen concentration was found decreased to a significant level from class A to C which is parallel to reports of Essawy F, et al.(2008).

CONCLUSION:

There is significant difference among three child-pugh classes of cirrhotic patients in terms of serum PT, aPTT ,Fibrinogen Level , D-Dimer Level and Platelet Count.

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