Utility of Pro C Global assay and Factor VIII activity as anti-coagulant and pro-coagulant factors in Hepatitis C cirrhotic patients

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Introduction

For a long time patients with hepatitis C liver cirrhosis are considered suffering from hypo-coagulability. It was thought that coagulation factors are decreased and therefore patients would be complicated by different types of hemorrhagic complications such as esophageal varices. Egypt is a country with the biggest number of HCV cirrhotic patients. So, It is important to assess the exact hemostatic state of the patients and whether it is affected by the stage of cirrhosis.

Objectives

The aim of our study is to determine the utility of Pro C Global assay and factor VIII activity as anti-coagulant and pro-coagulant factors in Hepatitis C cirrhotic patients.

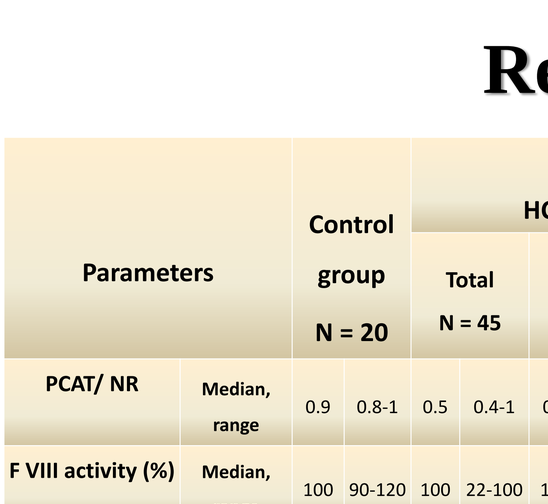
Methods

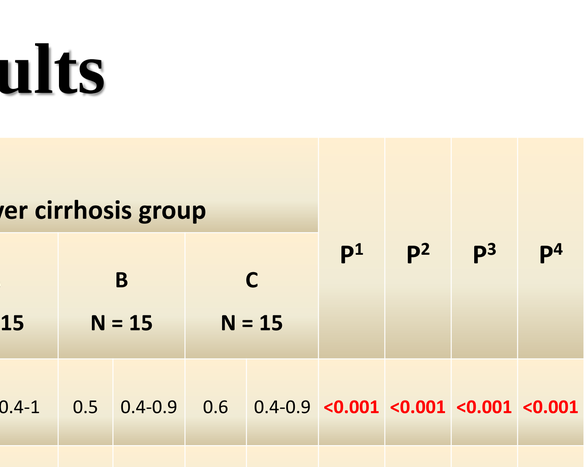
A case-control study was conducted for 45 adult patients with HCV liver cirrhosis (30 men, 15 women) with a median age of 51 years (range, 28- 84) subdivided into 3 groups each composed of 15 patient according to Child-Pugh classification in addition to 20 healthy control subjects comparable for age and sex. Test samples were collected from Mansoura internal medicine hospital out-clinics. Cases suffering from intrahepatic, extra hepatic malignancies or inflammatory conditions were excluded. Patients on drugs affecting blood coagulation also were excluded. Hemostatic screening tests, F VIII activity test (coagulation method), Pro C global test (coagulation method), protein C antigen (ELISA) and free protein S (ELISA) tests were performed for patients and controls.

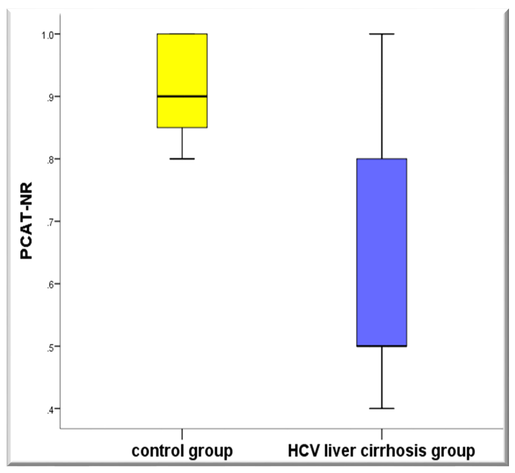
Results

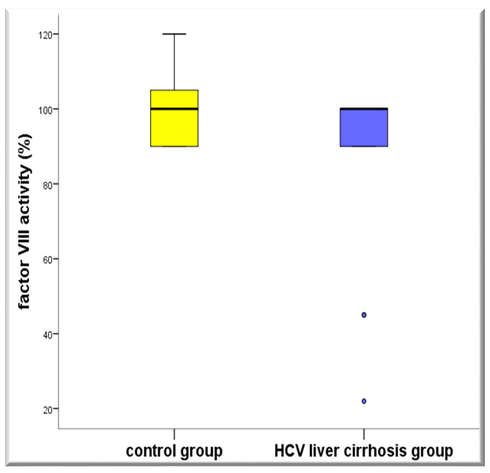
Parameters		Control group N = 20		HCV liver cirrhosis group Total N = 45		A N = 15		B N = 15		C N = 15		P[1]	P[2]	P[3]	P[4]
PCAT/ NR	Median, range	0.9	0.8-1	0.5	0.4-1	0.5	0.4-1	0.5	0.4-0.9	0.6	0.4-0.9	<0.001	<0.001	<0.001	<0.001
F VIII activity (%)	Median, range	100	90-120	100	22-100	100	90-100	100	45-100	100	22-100	0.180	0.568	0.085	0.494
PC antigen (%)	Median, range	86	77-99	45	10-97	47	18-92	40	10-94	45	12-97	0.028	<0.001	<0.001	0.003
Free PS antigen (%)	Mean, SD	83.08	17.503	59.2	21.881	83	17.50	59.2	23.544	53.40	19.949	<0.001	0.001	<0.001	0.012
F VIII/ PC	Median, range	1.14	1-1.43	2.13	.7-9.1	2.1	1.1-5	2.1	.96-9.1	2.1	.7-8.3	<0.001	<0.001	<0.001	.019

P value is significant when *P* <0.05. *P* [1], comparison between liver cirrhosis group and control group; *p* [2], comparison between class (A) and controls; *p* 3, comparison between class (B) and controls; *p* 4, comparison between class(C) and controls.

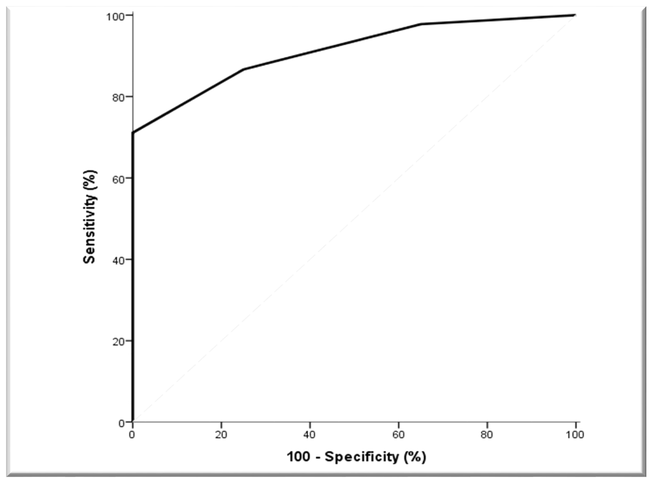








	AUC	p	95% CI	Cut off	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Accuracy (%)
Protein C Global	0.912	<0.001	0.845 -0.979	0.8	71.1	100	100	60.6	80



ROC analysis showed an area under the curve of 0.912 (P < 0.001), and the best cut off value for protein C global was 0.8, associated with 71.1% sensitivity, 100% specificity, 100% positive predictive value, 60 % negative predictive value and accuracy of 80% for prediction of liver cirrhosis.

Conclusions

It is no longer suitable to depend on PT only to assess the bleeding risks in hepatic patients. The balance between anticoagulants and pro-coagulants is almost restored in HCV liver cirrhosis patients due to parallel decrease both sides. The hypercoagulability of plasma from patients with cirrhosis can be detected with Pro C Global test which gives idea about deficiency of PC and PS.

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