SERUM LEVEL OF HEPCIDIN IN CIRRHOTIC PATIENTS AS A MARKER FOR HEPATOCELLULAR CARCINOMA

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Introduction

Hepatocellular carcinoma (HCC) is the predominant type of primary liver cancer, accounting for 70–85% of all cases, and is associated with severe morbidity and mortality.[1,2] Cirrhosis from any etiology is the strongest risk factor for HCC. HCC is the leading cause of death in patients with cirrhosis, with an annual HCC incidence of 1–6%.[3,4]

The use of several serum markers to detect the early diagnosis of HCC is highly recommended. There are many trials to discover a more sensitive and specific marker for HCC diagnosis.[5]

Hepcidin (encoded by HAMP gene) is the liver-secreted 25-amino acid hormone that maintains systemic iron homeostasis in the body. In HCC, iron-sensing is dysregulated, which in turninfers dysregulation of hepcidin and its modulators. Several studies indicatedthe important role of hepcidin in the progression of liver pathology and in cancer development, progression, and metastasis.[6,7]

Aim of the work

This study aimed to assess the serum level of hepcidin as a potential biomarker for HCC in cirrhotic patients.

Patients and Methods

This was a prospective case-control study conducted on patients who were admitted to the inpatient ward and the outpatient clinic of the Tropical Medicine Department, Faculty of Medicine, Alexandria University.

The patients were divided into 3 groups;

group I, including 30 cases of established cirrhotic patients without HCC,
group II, including 30 cases of established cirrhotic patients with HCC, and
group III, including 30 healthy controls of matched age and sex.

Serum hepcidin was measured by ELISA.

Results

Table 1: Comparison between the three studied groups according to Hepcidin

	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)	H	p
Hepcidin					
Min. – Max.	651.9 – 4000.0	821.8 – 4000.0	750.0 – 1990.3	10.880*	0.004*
Mean ± SD.	1333.5 ± 569.8	1155.5 ± 556.6	1174.6 ± 243.3		
Median (IQR)	1311.4 (1133.8–1385.4)	1015.3 (959.3–1159.9)	1124.3 (1039.1– 232.6)		
Sig. bet. grps.	p_1=0.001*, p_2=0.122, p_3=0.080				

p1: p value for comparing between Group I and Group II
p2: p value for comparing between Group I and Group III
p3: p value for comparing between Group II and Group III
*: Statistically significant at $p \leq 0.05$

Table 2: Comparison between the three studied groups according to serum AFP

	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)	H	p
Serum AFP					
Min. – Max.	2.90 – 22.0	4.0 – 22000.0	1.90 – 7.80	45.942*	<0.001*
Mean ± SD.	8.16 ± 5.41	3488.8 ± 6181.5	4.62 ± 1.90		
Median (IQR)	6.30 (4.4 – 10.0)	295.0 (12.0–1900.0)	5.0 (3.0 – 6.2)		
Sig. bet. grps.	p_1<0.001*,p=0.034*,p_3<0.001*				

p1: p value for comparing between Group I and Group II
p2: p value for comparing between Group I and Group III
p3: p value for comparing between Group II and Group III
*: Statistically significant at $p \leq 0.05$

Table 3: Correlation between Hepcidin and serum AFP in group II (Cirrhotic patients with HCC) (n = 30)

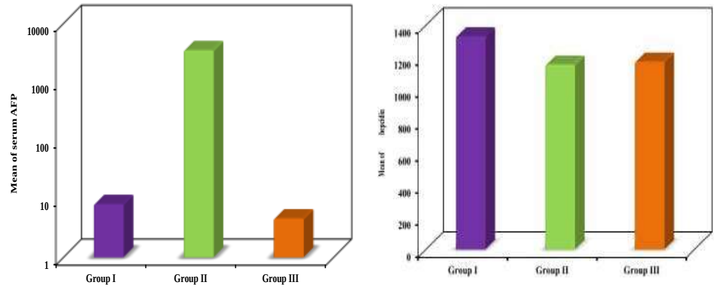
	r	p
Hepcidin vs. Serum AFP	-0.407	0.026*
Hepcidin vs. APRIscore	0.021	0.913

r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

Table 4: Diagnostic performance for Hepcidin and Serum AFP to discriminate group II (cirrhotic patients with HCC) (n = 30) from group I (cirrhotic patients without HCC) (n = 30)

	AUC	p	95% C.I	Cut off	Sensitivity	Specificity	PPV	NPV
Hepcidin	0.937	<0.001*	0.878 – 0.996	≤9.8	90.0	83.33	84.4	89.3
Serum AFP	0.882	<0.001*	0.793 – 0.972	>12	73.33	80.0	78.6	75.0
Combination	0.972	<0.001*	0.940 – 1.000		86.67	93.33	92.86	87.50

AUC: Area Under a Curve p value: Probability value
CI: Confidence Intervals NPV: Negative predictive value
PPV: Positive predictive value *: Statistically significant at $p \leq 0.05$
#Cut off was choose according to Youden index



Conclusion

Cirrhotic patients need to be closely monitored for the development of HCC to find HCC in the early stage. We concluded that hepcidin levels can be used as an important biochemical parameter in the progression of cirrhosis to HCC but not as a diagnostic marker for cirrhosis or HCC.