جامعة عين شمس
كلية العلوم
قسم الكيمياء الحيوية

معامل النمو المشابه للانسولين-1 ,الكوليستيرول وبعض المعادن كدلالات لتسرطن الكبد في المرضى المصريين المصابين بالالتهاب الكبدي الوبائي سي

رساله مقدمة من الطالبة

سها سعد الدين سيد عبده
ماجستير الكيمياء الحيوية (2012)
مدرس مساعد قسم الكيمياء الحيوية
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للحصول على درجة دكتوراه الفلسفة في الكيمياء الحيوية

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Ain Shams University
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Insulin like growth factor-1, cholesterol, and some metals as markers for hepatocarcinogenesis in Egyptian patients with hepatitis C infection

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بسم الله الرحمن الرحيم

رب اشرح لي صدري ويسر لي أمري

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Declaration

This thesis has not been submitted for a degree at this or any other university.

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Dedication

This work is dedicated to my lovely Family. Thank you for your unconditional support with my studies and for giving me a chance to prove and improve myself.

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Abstract

Background*:* The prevalence of serological markers of viral hepatitis C (HCV) infection in patients with hepatocellular carcinoma (HCC) is nearly 80%. However, the differential diagnosis between chronic hepatitis C (CHC) and HCC in early stages is a challenge. Manifestation of the malignant potential of the neoplastic cell requires cellular metabolic alterations to provide the bioenergetic, synthetic, and catabolic requirements of malignancy.

Aim: To investigate the direct and indirect metabolic effects of HCV on glucose homeostasis, lipid profile, iron overloading profile, zinc, and copper, and their relation to the development of HCC.

Subjects: Sixty non-diabetic male patients with CHC, were included in this study, 30 of them with proven diagnosis of HCC. Twelve matching healthy subjects were chosen as control group.

Methods: Routine blood tests included blood picture, liver function panel, lipid profile, glucose homeostasis, and markers of metabolic alterations (including IGF-1, Leptin, and TAOC), inorganic elements, and creatinine.

Abstract

Results: All patients showed higher Homeostasis model assessment for insulin resistance (HOMA-IR), liver enzymes, bilirubin, creatinine, leptin, iron, and ferritin, compared to controls. Markers that significantly differentiated HCC from HCV (from ROC curve) were an increase in Cu/Zn ratio, AFP, IGF-1 and Forns index, and a decrease in zinc, albumin, A/G ratio and leptin.

Conclusion: The overall metabolic alterations during HCV infection play an essential role in carcinogenesis. In addition, the global changes of metabolites that arise during, or as a consequence of tumorigenesis, could measure both the presence and the severity of disease. Association of decreased leptin and Zn, with increase in IR, Cu/Zn ratio and IGF-1 indicates HCC development. Therefore, the utility of these simple, non-invasive, potential biomarkers as predictors for HCC development could be valuable in Egyptian chronic HCV patients.

Key words: Hepatocellular carcinoma, chronic hepatitis C, insulin resistance, insulin like growth factor-1, copper, leptin, and zinc

LIST OF FIGURES