Diagnostic value of the copper/zinc ratio in both serum and tissue in Hepatocellular carcinoma

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By

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List of Abbreviations

AFB1	: Aflatoxin B1.
AFP	: Alpha fetoprotein.
ALP	: Alkaline phosphatase .
ALT	: Alanine transferase.
BMD	: Bone mineral density.
CHD	: Coronary heart disease .
CLD	: Chronic liver disease.
CT	: Computed tomographic scan.
Cu	: Copper .
DN	: Dysplastic nodules .
DNA	: Deoxy ribonucleic acid.
EASL	:Europian Association for the Study of the liver.
FNB	: Food and Nutrition Board .
HBc-Ag	: Hepatitis B core antigen .
HBs-Ag	: Hepatitis B surface antigen.
HBV	: Hepatitis B virus.
HCC	: Hepatocellular carcinoma.
HCV	: Hepatitis C virus.
HH	: Heridetary haemochromatosis.
LDL	: Low Density Lipoprotein
LOH	: Loss of heterozigosity.
mcg	: Microgram.
mg	: Milligram.
mm	: Millimeter.

PAI : Percutaneous acetic acid injection.
PEI : Percutaneous ethanol injection.
RDA : Recommended daily allowance.
RTFA : Radio frequency thermal ablation.
RNA : Ribonucleic acid.
SOD : Superoxide dismutase.
U/S : Ultrasound
Zn : Zinc.

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Aim Of The Work

Our study aimed to measure Copper , Zinc and Copper / Zinc ratio in cases of HCC and liver cirrhosis patients compared to normal controls to find out the possible value of these electrolytes as markers for prediction of HCC development in patients with liver cirrhosis .

Introduction

Hepatocellular carcinoma (HCC) is a major cause of death in patients with chronic liver disease .Worldwide , HCC is estimated to cause between 250,000 and 1 million deaths annually ***(Duvoux ,1998)***.

In cirrhotic patients, the incidence of HCC annually has been reported to be between 2% and 7% ***(Kountouras and Lygidakis , 2000)***.

To improve the prognosis of HCC, it is important to detect its presence as early as possible . Thus , screening for HCC is widely believed to be an effective form of secondary prevention . Screening studies have shown that it is possible to find small lesions that may be resectable ***(Gambarin-Gelwan et al., 2000)***.

The standard recommended screening tests for periodic follow up examinations are ultrasound (U/S) and alpha fetoprotein (AFP) . Both tests have significant false positive and false negative rates . Moreover , AFP determination is considered to be insufficient for early recognition of small HCC

because many patients with small masses have low levels of AFP and because serum levels of AFP are also elevated in benign liver disease ***(Bayati et al., 1998)***.

A greater problem is the finding of suspicious masses on U/S examination which require intensive investigation but turn out not to be HCC .therefore, other potentially useful screening tests are required in current clinical practice .

Hypozincemia, marked hypercupremia have been reported in patients with digestive ***(Beno et al., 2000)***, hepatic ***(Masaaki et al., 2000)***, breast ***(Yucel et al.,1994)***, lung ***(Ren et al., 2000)***, hematological malignancy ***(Sun et al., 2000)***.

Zinc and copper have been recognized as playing an important role as cofactors of superoxide dismutase.This enzyme protects cells against free radicals produing agents that might be involved in initiating neoplastic process (***Griglo et al., 1998***)

Zinc plays an important role as a cofactor of superoxide dismutase enzyme which protects cells against free radicals that might play a role in initiating neoplastic process ***(Wu et al., 1998)***.