شبكة المعلومات الجامعية

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بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

Sarcopenia as a predictor of prognosis and risk of recurrence in patients following curative treatment for hepatocellular carcinoma

Thesis

A Study Submitted for the Partial Fulfillment of the Master Degree in tropical department

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بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

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Mohamed Taha Hassan El-Sadaney

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List of Abbreviations

AASLD	:	American Association for the Study of Liver Diseases.
AFP	:	Alpha-fetoprotein.
AIDS	:	Acquired immunodeficiency syndrome.
APHE	:	Arterial phase hyper-enhancement.
ASCO	:	American Society of Clinical Oncology.
BCLC	:	Barcelona Clinic Liver Cancer.
BIA	:	Bioelectrical impedance analysis.
BMI	:	Body mass index.
Ca^{+2}	:	Calcium.
CKD	:	Chronic kidney disease.
CLIP	:	Cancer of liver Italian program.
CSA	:	Cross sectional area.
CSPH	:	Clinically significant portal hypertension.
CT	:	Computed tomography.
DEB	:	Drug eluting beads.
DEXA	:	Dual energy X-ray absorptiometry.
DFS	:	Disease free survival.
DM	:	Diabetes mellitus.
EASL	:	European Association for the Study of the liver.
ECOG	:	The Eastern Cooperative Oncology Group.
EORTC	:	European Organization for Research and Treatment of Cancer.
ER	:	Endoplasmic reticulum.
FDA	:	Food and Drug Administration.
FGF	:	Fibroblast growth factor.
HbeAg	:	Hepatitis B e antigen.
HBV	:	Hepatitis B virus.
HCC	:	Hepatocellular.
HCV	:	Hepatitis C virus.
HH	:	Hereditary hemochromatosis.
HIV	:	Human immunodeficiency virus.
HR	:	Hazard ratio.
IARC	:	International agency for research on cancer.
IGF-1	:	Insulin-like growth factor 1.
LC	:	Liver cirrhosis.

LR : Liver resection.
LT : Liver transplantation.
MAMC : Mid-arm muscle circumference.
MDCT : Multidetector Computed tomography.
MELD : Model for end-stage liver disease.
mRECIST: Modified response evaluation criteria in solid tumor.
MRI : Magnetic resonance imaging.
MWA : Microwave ablation.
NAA : Neutron Activation.
NAFLD : Non-alcoholic fatty liver disease.
NASH : Nonalcoholic steatohepatitis.
OS : Overall survival.
PBC : Primary biliary cirrhosis
PDGF : Platelet derived growth factor.
PIF : Proteolysis inducing factor.
PLA : Percutaneous laser ablation.
PVA : Polyvinyl alcohol.
RFA : Radiofrequency ablation.
RFM : Rectus femoris muscle.
SD : Standard deviation.
SE : Standard error.
SIRT : Selective Internal Radiation Therapy.
SMI : Skeletal muscle index.
SPSS : Statistical package for the social science.
TACE : Trans Arterial Chemoembolization.
TARE : Trans Arterial Radioembolization.
TNF : Tumor necrosis factor.
TNM : Cancer's tumor-node-metastasis.
TPMT : Transverse psoas muscle thickness.
TSF : Triceps skinfold thickness.
TTP : Time-to-progression.
UPS : Ubiquitin proteaosome-dependent system.
US : Ultrasonography.
VEGF : Vascular endothelial growth factor.
VEGFR : Vascular endothelial growth factor receptor.
WD : Wilson's disease.
α1AT : Alpha1-antitrypsin

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ABSTRACT

Purpose: This study is designed to evaluate the prognostic value of sarcopenia as a predictive method for survival of patients with hepatocellular carcinoma (HCC) who will receive curative treatment.

Methods: To determine the influence of sarcopenia on prognosis, skeletal muscle index (SMI) was measured using computed tomography at the level of the third lumbar vertebra of 100 patients who underwent radiofrequency for hepatocellular carcinoma (HCC). They were followed up for at least 7 months and overall survival and recurrence were identified. We defined sarcopenia using cutoff values for SMI as less than 43.75cm^2/m^2 for men and 41.10cm^2/m^2 for women.

Results: Sarcopenia was present in 54 of 100 patients and correlated significantly with low body mass index (BMI) and DM. Sarcopenia and MELD Na score were significantly associated with poor survival of the patients.

Conclusions: The study concluded that sarcopenia seemed to have a negative impact on OS in patients with HCCs. Sarcopenia could significantly increase the incidence rates of post-treatment recurrence and overall complications in patients with HCCs.

Keywords: hepatocellular carcinoma; skeletal muscle depletion; sarcopenia; prognostic factor

Introduction

According to the World Health Organization, HCC is the fifth most common tumor worldwide and the second most common cause of cancer-related death ***(Heimbach et al., 2018).*** Typically, patients with HCC have a poor clinical course as the prognosis is strongly affected by liver function and clinical cancer stage.

Among patients with cirrhosis, the cumulative 5-year risk of developing HCC ranges from 5% to 30%, depending on the presence and stage of underlying liver disease, age, sex and duration of the exposure to primary hepatotropic viruses ***(El-Serag and Davila, 2011).***

The recurrence rate of HCC is extremely high in compare with other malignancies ***(Tabrizian et al., 2015)*** which is also associated with the poor prognosis.

Because of these peculiarities, the long-term prognosis for patients with HCC is very poor and the outcome prediction for this malignancy is extremely complicated. Therefore, it is important to identify useful prognostic factors for HCC in order to determine the best therapeutic approach in each case. Several prognostic staging systems, such as Barcelona Clinic Liver Cancer (BCLC), and Cancer of the Liver Italian Program (CLIP), most of which take both clinical cancer stage and liver

functional reserve into consideration, have been developed ***(Llovet et al., 1999).***

Recently, skeletal muscle depletion or sarcopenia, defined as are low muscle mass with low muscle strength or physical performance, has earned attention as a new and promising prognostic factor for various malignancies such as pancreatic cancer, melanoma and lymphoma ***(Sabel et al., 2011).***While HCC in contrast, remains unclear whether sarcopenia predicts prognosis and recurrence among patients with HCC who either undergo curative treatment or not. Skeletal muscle volume depletion assessed by computed tomography (CT) predicts poor prognosis of all cancer stage.

Aim of the Work

The aim of this study is to determine the prognostic value of sarcopenia as a predictive method for survival of patients with hepatocellular carcinoma (HCC) who will receive curative treatment.