بسم الله الرحمن الرحيم

HANAA ALY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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Glypican-3: A Promising Biomarker for Hepatocellular Carcinoma Diagnosis

Thesis

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بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

قَالُوا

سُبْحَانَكَ لَا عِلْمَ لَنَا

إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ

الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

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Acknowledgment

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Abb.	Full term
^{18}F-FDG	^{18}F-fluorodeoxyglucose
A1ATD	α1-Antitrypsin deficiency
ADC	apparent diffusion coefficient
ADCC	Antibody-dependent cellular cytotoxicity
AFP	Alpha feto protein
AFP-L3	Lens culinaris agglutinin-reactive AFP
BALB/c	Albino, laboratory-bred strain
BCLC	Barcelona clinical liver cancer staging system
CD4	Cluster of differentiation 4
CDC	Complement-dependent cell cytotoxicity
CEUS	Contrast-enhanced ultrasound
CLC	Chronic liver cirrhosis
CSPH	Clinically significant portal hypertension
CT	Computerized tomography
DCP	Des-γ-carboxy prothrombin
DWI	Diffusion-weighted imaging
EASL	European Association for the Study of the Liver
EGF	Epidermal growth factor
GPC-3	Glypican3
GPI	Glycosylphosphatidylinositol
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis c virus
HFL	Hepatic focal lesion
HIV	Human immunodeficiency virus
IGFs	Insulin-like growth factors
LMR	Lymphocyte-to-monocyte ratio

List of Abbreviations Cont...

Abb.	Full term
LT	Liver transplant
MDCT	Multi-detector helical CT
MPCT	Multiphasic helical computerized tomography
MRI	Magnetic resonance Imaging
NAFLD	Nonalcoholic fatty liver disease
NASH	Nonalcoholic steatohepatitis
NLR	Neutrophil–to-lymphocyte ratio
PDGF	Platelet-derived growth factor
PET	Positron emission tomography
PLR	Platelet-to-lymphocyte ratio
PS	Performance status
PVT	Portal vien thrombosis
RFA	Radio frequency ablation
ROC	Receiver operating Characteristics
sGPC3	Soluble form of glypican3
SqCC	Squamous cell carcinoma
T2DM	Type 2 diabetes mellitus
TACE	Trans arterial chemo embolization
TGF	Transforming growth factor
VEGF	Vascular endothelial growth factor
WHO	World health organization

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INTRODUCTION

HCC is considered to be the fifth commonest cause of cancer-related morbidity. Moreover, HCC incidence is rapidly rising at alarming rates, and it has become a major global health concern *(Kimhofer et al., 2015)*.

In Egypt, the risk factors for HCC are either environmental- or host/genetic-related risk factors. In the last years, there is a tangible improvement of both screening and surveillance strategies of HCC in Egypt. The unprecedented national screening campaign launched by the end of 2018 is a mirror image of this improvement. While the improvement of the HCC prevention requires the governmental health administration to implement health policies. Although the diagnosis of Egyptian HCC patients follows the international guidelines but HCC treatment options are limited in terms of cost. In addition, there are limited Egyptian reports about HCC survival and relapse. Both basic and clinical HCC research in Egypt is still limited compared to worldwide *(Rashed et al., 2020)*.

AFP levels have been dropped from current surveillance guide-lines in Europe and the United States because of its low sensitivity and specificity. Therefore, a novel biomarker with superior diagnostic accuracy than AFP is greatly desired *(Liu. et al., 2014)*.

Glypican-3 (GPC3) is a member of the glypican family of glycosyl-phosphatidylinositol-anchored cell-surface heparan-sulfate proteoglycans. Its levels increase considerably in patients with HCC, while GPC3 is not detected in healthy liver tissue, so it has been identified as a useful tumor marker for HCC diagnosis *(Rojas et al., 2018).* Investigation of usefulness of serum GPC3 level showed that GPC3 protein is an early sensitive and specific serum marker for initial diagnosis of HCC and for HCC recurrence after liver transplantation *(Yu et al., 2015).*