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بالرسالة صفحات
لم ترد بالأصل

A Study of Fetuin A in Fatty Liver (NAFLD) With and Without Chronic Kidney Disease

Thesis

Submitted For Partial Fulfillment Of Master Degree In Internal Medicine

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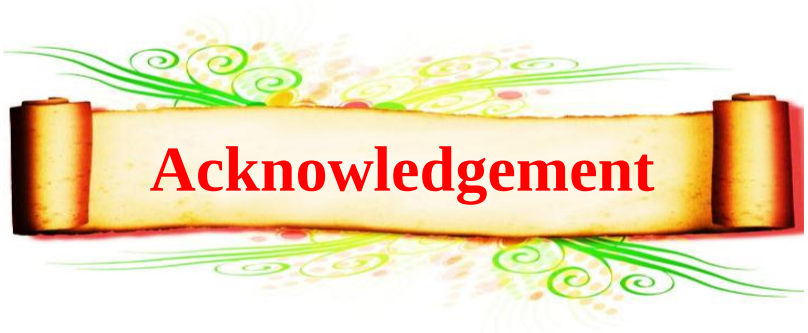

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Contents

List of Abbreviations

2 hr PP	: Two Hour Post Prandial
AASLD	: American Association for The Study of Liver Disease
AHSG	: Alpha 2-Heremans Schmid Glycoprotein
ALT	: Alanin Aminotransferase
AMPK	: Activated Protein kinase
AST	: Aspartate Aminotransferase
BCP	: Binding Basic Calcium Phosphate
BMI	: Body Mass Index
BP	: Blood Pressure
CaxP	: Calcium-Phosphorus Product
CCr	: Creatinine Clearance
CESD	: Cholesterol Ester Storage Disease
CKD	: Chronic Kidney Disease
CRF	: Chronic Renal Failure
CRP	: C-Reactive Protein
DNL	: De Novo Lipogenesis
EASL	: European Association For The Study of Liver
ELF	: Enhanced Liver Fibrosis
ESRD	: End-Stage Renal Disease
EVs	: Extracellular Vesicles
FBS	: Fasting Blood Sugar
FFA	: Free Fatty Acid
FFA	: Free Fatty Acid
FGF-21	: Fetuin-A, Fibroblast Growth Factor-21
FLI	: Fatty Liver-Index
GFR	: Glomerular Filtration Rate
GGT	: Gamma-Glutamyl Transferase
GLP-1	: Glucagon-like peptide-1
GLUT4-	: Glucose Transporter-4
GNG	: Gluconeogenesis
GSK-3	: Glycogen Synthase Kinase-3
HBV	: Hepatitis B Virus
HCC	: Hepatocellular Carcinoma
HCV	: Hepatitis C Virus
HD	: Hemodialysis
HDL	: High-Density Lipoprotein
HOMA-IR	: Homeostasis Model
HR	: Heart Rate
HRG	: Histidine-Rich Glycoprotein

IGFs	: Insulin-Like Growth Factors
IRS-1	: Insulin Receptor Substrate Proteins
KNG	: Kininogen
LAL	: Lysosomal Acid Lipase
LDL	: Low-Density Lipoprotein
MAPK	: Mitogen-Activated Protein Kinase
MetS	: Metabolic Syndrome
MRE	: Magnetic Resonance Elastography
NAFLD	: Non- Alcoholic Fatty Liver Disease
NASH	: Nonalcoholic Steatohepatitis
NICE	: National Institute for Health and Care Excellence
PI3-K	: Phosphatyl Inositol 3-Kinase
PKB	: Protein Kinase B
PNPLA3	: Patatin-Like Phospholipase Domain-containing Protein 3
RBS	: Random Blood Sugar
RR	: Respiratory Rate
SNPs	: Single-Nucleotide Polymorphisms
SNPs	: Several Single Nucleotide Polimorphisms
T2DM	: Type 2 Diabetes Mellitus
VCTE	: Vibration Controlled Transient Elastography
VLDL	: Very Low-Density Lipoprotein
WHO	: World Health Organization
WHO	: World Health Organization

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Abstract

Background: Obesity and insulin resistance are known risk factors for both chronic kidney disease (CKD) and nonalcoholic fatty liver disease (NAFLD). Further studies identify mechanisms common to both diseases linked through an inter-organ communication orchestrated by fetuin-A and adiponectin. **Aim of the Work:** to determine the serum level of Fetuin A in cases of non- alcoholic fatty liver disease (NAFLD), as compared to normal controls. Also, as a main objective, is to determine the serum level of Fetuin A in cases of chronic kidney disease (CKD), as compared to normal controls, and try to correlate it to the severity of the disease. **Patients and Methods:** This cross sectional cohort study was conducted on 80 persons divided into 4 groups: Group I: Includes 20 Healthy adult normal controls, Group II: Includes 20 adult patients with NAFLD, Group III: Includes 20 adult patients with CKD & NAFLD and Group IV: Includes 20 adult patients with CKD. **Results:** We detected that there is statistically significant difference between the four studied groups regarding Weight, Height & BMI ($P<0.05$). However there is a statistically insignificant difference between the four studied groups regarding Age & Gender ($P>0.05$). That there is statistically significant difference between the four studied groups regarding Serum Feutin-A ($P<0.05$). There is statistically significant positive correlation between Serum Feutin-A & (Weight, BMI, Systolic BP, Urea, Creatinine, Sodium, Calcium, Phosphorous, Cholesterol, Triglyceride, LDL, ALT, AST, FBS, 2hr PP & RBS); In addition to that there is a statistically significant negative correlation between Serum Feutin-A & (Height, HDL & Albumin) ($P<0.05$). There is statistically significant negative correlation between Serum Feutin-A & (HDL) in Group I "Adult Normal Controls" ($P<0.05$). The results revealed a statistically significant positive correlation between Serum Feutin-A & (FBS); In addition to that there is a statistically significant negative correlation between Serum Feutin-A & (Diastolic BP) ($P<0.05$). We detected that there is statistically significant positive correlation between Serum Feutin-A & (FBS), (2 hr PP)(RBS), Serum urea &Creatinine and potassium.; In addition to that there is a statistically significant negative correlation between Serum Feutin-A & (Diastolic BP) and (Systolic BP) ($P<0.05$). We detected that there is statistically significant positive correlation between Serum Feutin-A & (LDL, Calcium, Triglyceride & Creatinine); In addition to that there is a statistically significant negative correlation between Serum Feutin-A & (HR) ($P<0.05$). **Conclusions:** Fetuin-A is a glycoprotein in the liver and a potent inhibitor of vascular calcification in the blood circulation in patients with chronic renal failure and end-stage kidney failure.

Key words: Fetuin A, Fatty Liver, NAFLD, chronic kidney disease

INTRODUCTION

Fetuin-A, also called Alpha 2-Heremans Schmid Glycoprotein, is a multifunctional plasma agent that has been proven in animal and human studies. It plays a role as a physiological inhibitor of insulin receptor tyrosine kinase associated with insulin resistance and a negative acute phase reactant. It also regulates bone remodeling and calcium metabolism being an important inhibitor of calcium salt precipitation and vascular calcifications. ***(Wojtysiak, et al., 2010)***

Due to secretion of Fetuin-A mainly by the liver, it may be a marker of liver function and predictor of mortality in patients with cirrhosis and other complications. ***(Dabrowska, et al., 2015)***

The associations between high Fetuin-A and metabolic syndrome as well as its hepatic manifestation: nonalcoholic fatty liver disease (NAFLD) and atherogenic lipid profile have been well proven. Furthermore, obesity is a risk factor for chronic kidney disease (CKD) and nonalcoholic fatty liver disease (NAFLD). Further studies identify mechanisms common to both diseases linked through an inter organ communication orchestrated by Fetuin-A and Adiponectin. ***(Makhlouf, et al., 2018)***

In the renal field, Fetuin-A has principally been studied as an inhibitor of ectopic calcium deposition, yet Fetuin-A is also an important promoter of insulin