



# **NON-ALCOHOLIC FATTY LIVER DISEASE AND ECG CHANGES IN EGYPTIAN PATIENTS**

*Thesis*

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Hepatology*

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## □ مرض تشحم الكبد الغير كحولي وتغيرات رسم القلب في المرضى المصريين

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبَدَّانِكَ لَا عِلْمَ لَنَا  
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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## **LIST OF ABBREVIATIONS**

<b>AASLD</b>	American Association for the Study of Liver Diseases.
<b>ABCC2</b>	ATP Binding Cassette Subfamily C Member 2.
<b>ACE</b>	Angiotensin converting enzyme.
<b>AF</b>	Atrial fibrillation.
<b>AFP</b>	Alfa fetoprotein.
<b>AHA</b>	American Heart Association.
<b>AKP</b>	Alkaline phosphatase.
<b>ANA</b>	Antinuclear antibody
<b>ANC</b>	Absolute neutrophilic count.
<b>ANI</b>	Alcoholic liver disease to NAFLD index.
<b>ASMA</b>	Anti-smooth muscle antibody.
<b>AST/ALT</b>	Aspartate aminotransferase/alanine transaminase.
<b>AUROC</b>	Under the ROC curve.
<b>AVS</b>	Aortic-valve sclerosis.
<b>BARD</b>	BMI, AST/ALT Ratio, and Diabetes Score.
<b>BBB</b>	Bundle branch blocks.
<b>BGL</b>	Basal glucose level.
<b>BMI</b>	Body mass index.
<b>BNP</b>	Brain natriuretic peptide.
<b>BUN</b>	Blood urea nitrogen.
<b>Ca</b>	Calcium.
<b>CA</b>	California.
<b>CAC</b>	Coronary artery calcium.
<b>CARDIA</b>	Coronary Artery Risk Development in Young Adults.
<b>CAT</b>	Computerized Axial Tomography.
<b>CBC</b>	Complete blood count.
<b>CHD</b>	Coronary heart disease.
<b>CHF</b>	Congestive heart failure.
<b>CK18</b>	Cytokeratin 18
<b>CKD</b>	Chronic kidney disease.
<b>Clock</b>	Circadian Locomotor Output Cycles Kaput.
<b>Creat</b>	Creatinine.
<b>CRN</b>	Clinical Research Network.
<b>CRP</b>	C-reactive protein.
<b>CT</b>	Computed tomography.
<b>CTL-S</b>	Liver-to-spleen difference in attenuation.

## **LIST OF ABBREVIATIONS CON.**

<b>CVD</b> .....	Cardiovascular disease.
<b>CYP</b> .....	Cytochrome P.
<b>DBP</b> .....	Diastolic blood pressure.
<b>DGAT2</b> .....	Diacylglycerol O-acyltransferase 2.
<b>DMGDH</b> .....	Dimethylglycine dehydrogenase.
<b>DNA</b> .....	Deoxyribonucleic acid.
<b>ECG</b> .....	Electro Cardio Gram.
<b>EDTA</b> .....	Ethylenediaminetetraacetic acid.
<b>EF</b> .....	Ejection fraction.
<b>EKG or ECG</b> .....	Electrocardiogram.
<b>ELF</b> .....	Enhanced Liver Fibrosis.
<b>ELISA</b> .....	Enzyme-linked immunosorbent assay.
<b>ERLIN1</b> .....	ER lipid raft associated 1.
<b>EWAS</b> .....	Exome-wide association studies.
<b>FBG</b> .....	Fasting blood glucose.
<b>FBS</b> .....	Fasting blood sugar.
<b>FDA</b> .....	Food and Drug Administration.
<b>FDFT1</b> .....	Farnesyl-diphosphate farnesyltransferase.
<b>FFA</b> .....	Free fatty acids.
<b>FGF-21</b> .....	Fibroblast growth factor 21.
<b>Fiaf</b> .....	Fasting-induced adipose factor (also referred to as angiopoietin-like protein 4)
<b>FIB4 Index</b> .....	Fibrosis 4 index.
<b>GCKR</b> .....	Glucokinase regulatory gene.
<b>GGT</b> .....	Gamma glutamyl transferase.
<b>GLP-1</b> .....	Glucagon-like peptide-1.
<b>GWAS</b> .....	Genome-wide association studies.
<b>HA1C</b> .....	Hemoglobin A1C.
<b>HAIR score</b> .....	Hypertension, alanine aminotransferase and insulin resistance.
<b>HBsAg</b> .....	Hepatitis B surface antigen
<b>HCV Ab</b> .....	Hepatitis C virus antibody.
<b>HDL</b> .....	High density lipoprotein.
<b>HDL-C</b> .....	High density lipoprotein cholesterol.
<b>HELLP</b> .....	Hemolysis, elevated liver enzymes, and low platelet count occurring in pregnancy.
<b>HOMA IR</b> .....	Homeostasis model assessment–insulin resistance.
<b>HSC</b> .....	Hepatic stellate cells (HSC)

**LIST OF ABBREVIATIONS CON.**

<b>HU</b> .....	Hounsfield units.
<b>HU<sub>liver</sub></b> .....	Absolute liver attenuation value.
<b>HVPG</b> .....	Hepatic venous portal gradient.
<b>ICU</b> .....	Intensive care unit.
<b>IL</b> .....	Interleukin.
<b>IL-6</b> .....	Interleukin6.
<b>INC.</b> .....	Incorporation.
<b>INR</b> .....	International normalized ratio.
<b>IR</b> .....	Insulin resistance.
<b>K</b> .....	Potassium.
<b>KLF6</b> .....	Krüppel-like factor-6.
<b>KPa</b> .....	Kilopascals.
<b>LA</b> .....	Left atrial.
<b>LBbB</b> .....	Left BBB.
<b>LDL</b> .....	Low-density lipoprotein.
<b>LDL-C</b> .....	Low density lipoprotein cholesterol.
<b>LTBP3</b> .....	Latent transforming growth factor beta.
<b>LV</b> .....	Left ventricular.
<b>LVEF</b> .....	Left ventricular ejection fraction.
<b>MAC</b> .....	Mitral annulus calcification.
<b>MCV</b> .....	Mean corpuscular volume.
<b>MELD</b> .....	Model for end-stage liver disease.
<b>MELD-NA</b> .....	Model of end stage liver disease-sodium.
<b>microRNAs</b> .....	Micro ribonucleic acid.
<b>MRI</b> .....	Magnetic resonance imaging.
<b>MRS</b> .....	Magnetic resonance spectroscopy.
<b>MS</b> .....	Metabolic syndrome.
<b>N/L</b> .....	Neutrophil to lymphocyte ratio.
<b>Na</b> .....	Serum sodium.
<b>NADPH</b> .....	Nicotinamide adenine dinucleotide phosphate hydrogenase.
<b>NAFLD</b> .....	Nonalcoholic fatty liver disease.
<b>NAS</b> .....	NAFLD activity score.
<b>NASH CRN</b> .....	NASH Clinical Research Network.
<b>NASH</b> .....	Nonalcoholic steatohepatitis.
<b>NCAN/TM6SF2/CILP2/PBX4</b>	<b>TM6SF2:</b> Transmembrane 6 superfamily member 2/CILP2 cartilage intermediate layer protein 2.
<b>NFS</b> .....	Nonalcoholic fatty liver disease fibrosis score



**LIST OF ABBREVIATIONS CON.**

NHANES.....	National Health and Nutrition Examination Survey.
NHLBI.....	National Heart, Lung, and Blood Institute.
NIKEI.....	Non-invasive Koeln-Essen-index.
NR1H4.....	Nuclear Receptor Subfamily 1 Group H Member 4.
oxNASH .....	Risk score for NASH.
PACs.....	Premature atrial contractions
PAI-1 .....	Plasminogen activator inhibitor-1.
PARVB.....	Parvin beta.
PDFF .....	Proton density fat fraction.
PEMT .....	Phosphatidylethanolamine N-methyltransferase.
PHT .....	Portal hypertension.
PMN .....	Polymorphonuclear leukocytes (neutrophils).
PNPLA3 .....	Patatin-like phospholipase domain containing 3.
PPBS.....	Post prandial blood sugar.
PPP1R3B.....	Protein phosphatase 1, regulatory Subunit 3B.
PT .....	Prothrombin time.
PTT.....	Partial thromboplastin time.
PV .....	Portal vein.
PVCs.....	Premature ventricular contractions.
PVD .....	Portal vein diameter.
PXR .....	Nuclear pregnane X receptor.
QTc.....	Corrected QT interval
QTcB .....	Corrected QT interval Bazett's formula.
QTd.....	Qt dispersion.
QTmax .....	Longest QT interval
RAS.....	Renin-angiotensin system.
RBBB.....	Right BBB.
RNA .....	Ribonucleic acid.
ROC.....	Receiver operating characteristics.
ROS .....	Reactive oxygen species
RV.....	Right ventricular.
RXRA .....	Retinoid X Receptor Alpha.
SBP .....	Systolic blood pressure.
SD .....	Standard Deviation.
sFas.....	Soluble Fas.
SH-HCC .....	Steatohepatic hepatocellular carcinoma.
SNP .....	Single nucleotide polymorphisms.
SNPs .....	Single nucleotide polymorphisms.
SOD2 .....	Mitochondrial superoxide dismutase 2.

**LIST OF ABBREVIATIONS CON.**

<b>SPSS</b> .....	Statistical package for special science.
<b>SS</b> .....	Simple steatosis.
<b>STAT3</b> .....	Signal transducer and activator of transcription 3.
<b>STEMI</b> .....	ST-elevation myocardial infarction.
<b>SUA</b> .....	Serum uric acid.
<b>T2DM</b> .....	Type 2 diabetes mellitus.
<b>TAG</b> .....	Triacylglycerol.
<b>TG</b> .....	Triglycerides.
<b>TGF</b> .....	Transforming growth factor.
<b>TGF-<math>\beta</math></b> .....	Transforming growth factor beta.
<b>TGR5</b> .....	G-protein-coupled receptor 5.
<b>TLC</b> .....	Total leucocytic count.
<b>TLR</b> .....	Toll-like receptor.
<b>TLR4</b> .....	Toll-like receptor 4.
<b>TM6SF2</b> .....	Transmembrane six superfamily member 2.
<b>TNF</b> .....	Tumor necrosis factor.
<b>TNF-<math>\alpha</math></b> .....	Tumor necrosis factor alpha.
<b>Tpe</b> .....	Transmural dispersion of repolarization.
<b>UA</b> .....	Uric acid.
<b>UDCA</b> .....	Ursodeoxycholic acid.
<b>US adults</b> .....	United States.
<b>US</b> .....	Ultrasonography.
<b>USA</b> .....	United States of America.
<b>VDD</b> .....	Vitamin D deficiency.
<b>WHR</b> .....	Waist-to-hip circumference.

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