Endotoxemia in hemodialysis patients with chronic HCV infection

Thesis

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By

Amira Mohamed Mahmoud Abd El Ghani

M.B,B.ch Ain shams university

Under supervision of

Prof. Dr. Mohamed Ali Ibrahim

Professor of Internal Medicine and Nephrology

Head of nephrology department

Faculty of medicine_ Ain shams university

Dr. Ahmed Shaban Serag El-Deen

Lecturer of Internal Medicine &Nephrology

Faculty of Medicine_ Ain Shams University

Dr. Doaa Mostafa El-Zoghby

Lecturer of Clinical and chemical Chemistry

Faculty of Medicine_ Ain Shams University

Faculty of Medicine

Ain Shams University

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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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Contents

List of Abbreviations

[Ca2+]i: cytosolic-free Ca2+ co

5'NCR: 5'non-coding region

AA: arachidonic acid

AAMI: Association for Advancement of Medical Instrumentation

AGEs: advanced glycation end-products

ALT: alanine transaminase

AMPs: Antimicrobial peptides

ANSI: American National Standards Institute

AVF: arteriovenouse fistula

BSP: brain specific proteins

CD14: cluster of differentiation

CDC's: Centers for Disease Control and Prevention

CKD chronic kidney disease

CPFA: Coupled plasma filtration adsorption

cPLA2 cytosolic phospholipase A2;

CRP: C reactive protein

CRRT: continuous renal replacement therapy

CVD: cardiovascular disease

DNA: Deoxyribonucleic acid

E1 and E2:envelope proteins E1 and E2

EBPG: European Best Practice guidelines

EE: Enterogenous endotoxemia

EEG: electroencephalographic

EIA: enzyme immunoassay

ELISA: Enzyme linked immunosorbent assay

EPO: Erythropoietin

ESRD: end-stage renal disease

ESRF: end-stage renal failure

ET: endotoxin

EU: Endotoxin unit

FAO: Food and Agriculture Organization

GLP-2: Glucagon-like peptide 2

GPRs: G protein coupled receptors

HCC: hepatocellular carcinoma

HCO: high cut-off

HD: hemodialysis

HDF: hemodiafiltration

HMGB-1: high-mobility group box 1 protein

HsCRP: High sensitivity C reactive protein

IE: intestinal endotoxin

IFNɤ: Interferon ɤ

IL-12: Interleukin 12

IL-18: Interleukin 18

IL-1β: Interleukin 1 β

IL-6:Interleukin 6

iNOS: inducible nitric oxide;synthase;

INR: international normalised ratio

IVC: Intravenous Catheter

KDIGO: Kidney disease improving global outcomes

LBP: lipopolysaccharide-binding protein

LDL: Low density lipoprotein

LPS: lipopolysaccharide

LPS-LBP complex: lipopolysaccharide-lipopolysaccharide-binding protein complex

LV: Left ventricle

MAPK: mitogen-activated protein kinase

mCD14: a membrane bound cluster of differentiation

MCP-1: monocyte chemoattractant protein-1

MIA: malnutrition, inflammation, and atherosclerosis syndrome.

NANBH: non-A, non-B hepatits

NAT: nucleic acid amplification technology

NF-κB: Nuclear factor kappa B

NLRs: nucleotide-binding oligomerization domain receptors

NO: nitric oxide;

NUF: new single-use ultrafilter

ODN: oligodeoxynucleotides

ONNO: peroxynitrite;

p7, NS2-5: protein seven non- structural 2-5

PCR: polymerase chain reaction

PEPA: polyester-polymer alloy

PMMA: poly methyl methacrylate

PMX: Polymyxin

PPAR gamma: peroxisomal proliferator activated receptor gamma

RIBA: recombinant immunoblotting assay.

RNA: Ribonucleic acid

RO: Reverse osmosis

ROS: reactive oxygen species

RUF: Reference ultrafilter

sCD14: soluble cluster of differentiation

SCFAs: short chain fatty acids

SIRS: Systemic Inflammatory Response Syndrome

TLR: Toll like receptors

TNF- α: Tumor necrosis factor α

WHO: World Health Organization

β2M: β2-microglobulin

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INTRODUCTION

Introduction

Bacterial endotoxin is a lipopolysaccharide (LPS) and the major glycolipid component of the outer membrane of gram-negative bacteria, which comprise 70% of the total bacteria in the healthy human gut. Exposure to endotoxin results in release of a wide variety of proinflammatory cytokines and binding via CD14 to systemic immune competent cells. ***(Christopher W et al.,2010).***

LPS molecules can form aggregates which are too large to pass through dialysis membranes. It has been shown that components of lipopolysaccharide (lipid A) are able to pass through dialysis membranes, can elicit a pyrogenic response, and contribute to long-term morbidity and inflammation ***(Raj et al., 2009)***.

Endotoxin results in a broad range of negative cardiovascular effects including peripheral vasodilation and reduction in cardiac contractile performance. patients on long-term maintenance hemodialysis have evidence of mucosal ischemia and ultrafiltration causes a reduction in splanchnic blood volume despite preserved blood pressure. Mesenteric ischemia results in disrupted gut mucosal structure and function, with increased gut permeability .also Endotoxin contamination of dialysis water has