شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

Ain Shams University Information Network

جامعة عين شمس

شبكة المعلومات الجامعية

@ ASUNET

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار
في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

بعض الوثائق الاصلية تالفة

Urinary tract infection in patients with Chronic Liver diseases

Thesis submitted for partial fulfillment
of M. Sc. degree in Clinical Pathology

By

Abeer Hamdy Mohammed El-Shalakani

MB.BCh

Supervisors

Prof. Dr/ Gehan Kamal El-Saeed
Professor of Clinical &
Chemical Pathology,
Faculty of Medicine,
Menoufiya University

Pro. Dr./ Emad Fahim Abd-el Halim
Professor of Clinical &
Chemical Pathology,
Faculty of Medicine,
Menoufiya University

Dr/ Mabrouk Mahmoud Ghonium
Ass. Prof. Of Microbiology
Faculty of Medicine,
Menoufiya University

Dr/ Rawhia Hassan El Edel
Ass. Prof. of Clinical & Chemical Pathology,
Faculty of Medicine,
Menoufiya University

Faculty of medicine,
Menoufiya University
2004

Urinary tract infection in patients with Chronic Liver diseases

Thesis submitted for partial fulfillment
of M. Sc. degree in clinical pathology

By
Abeer Hamdy Mohammed El-Shalakani

MB.BCh

Discussed by

Prof. Dr. Mohamed Ali El Hindi (Ext. exam
Professor and Head of Clinical & Chemical Pathology,
Faculty of Medicine (BANHA),
Zagazege University

Prof. Dr. Sanaa Saied Gazareen (Int. exam
Professor and Head of internal medicine,
Faculty of Medicine, Menoufiya University

Prof. Dr. Gehan Kamal El-Saeed
Professor of Clinical & Chemical Pathology,
Faculty of Medicine, Menoufiya University

Pro. Dr. Emad Fahim Abd-el Halim (Supervisors)
Professor of Clinical & Chemical Pathology,
Faculty of Medicine, Menoufiya University

Faculty of Medicine
Menoufiya University
2004

ACKNOWLEDGEMENT

I wish to express my profound gratitude and sincere thanks to Allah. His magnificent help is the first factor in every thing we can do in our life.

I would like to express my gratitude to **Prof. Dr. Gehan Kamal El-saeed,** Professor of Clinical and Chemical Pathology Department, Faculty of Medicine, Menoufiya University, Without her keen supervision, patience and continuous constructive criticism together with her unlimited generous encouragement this work would not have been accomplished.

I would like to express my appreciation and sincere gratitude to **Prof. Dr. Emad Fahim Abd-El Halim** Professor of Clinical and Chemical Pathology, Faculty of Medicine, Menoufiya University, for his continuous support. I take this opportunity to express my appreciation and sincere gratitude for continuous efforts, advice and support throughout this thesis.

I would like to deeply present my thanks to **Ass. Prof. Dr. Mabrouk Mahmoud Ghonium,** Ass. Prof. of Microbiology and immunology, Faculty of Medicine, Menoufiya University and **Ass. Prof Dr. Rawhia Hassan El-Edel Ass. Prof** of clinical and chemical Pathology, Faculty of Medicine, Menoufiya University, For their continuous effort and great support.

Also I would like to thank all the staff members of Clinical Pathology Department, Faculty of Medicine, Menoufya University, who in one way or another gave me a hand throughout the performing of this study.

Lastly, my thanks are also extended to my family for their encouragement.

List of abbreviations

AH50..... Alternative pathway haemolytic activity

AMA.....Antimitochondrial antibody

Anti-LKM..... Anti liver/kidney microsome hepatitis

b DNA..... Branched-chain DNA

BCOADC..... Branched chain 2-oxo-acid dehydrogenase complex

BCR..... B-cell receptor

C9 RP..... C9-related protein

CCK..... Cholecystokinin

cDNA.....Complementary DNA

CFU..... Colony Forming Unite

CH50..... Complement haemolytic activity

CIC..... Circulating immune complex

CIINH..... C1 inhibitor

CLD.....chronic liver disease

CLED.....Cystine Lactose Electrolyte Deficient Medium

CNF..... Cytotoxic Necrotizing Factor

CR1 ..... Complement receptor 1

CSU.....Catheter specimens of urine

CTLs..... Cytotoxic T lymphocytes

CVF.....Cobra venoum factor

DAF.....Decay accelerating Factor

dNTPs..... Deoxynucleotide Triphosphate

Dr(a).....Drori blood group antigen

dUTP.....deoxyuridine triphosphates

E.coli ..... Escherechia coli

ELISA.....Enzyme linked immunosorbant assay

FACS..... Fluorescence-activated cell sorter

GPI..... Glycosyl phosphatidyl inositol

HAE..... Hereditary angioneurotic oedema

HCC..... Hepatocellular carcinoma

HUS..... Haemolytic uraemic syndrome

IEP..... Immunoelectrophoresis

IL..... Interleukin

IUD .....Intrauterine Device

K. pnumoniae..... Klebsiella pnumoniae

L.J..... Lowenstein-Jensen medium

LC..... Liver cirrhosis

LGLs.....Large granular lymphocytes

LOS.....Lipooligosaccharide

LPS.....Lipopolysaccharide

MAC.....membrane attack complex

MASP..... MBL-associated serine protease

MBL..... Mannose-binding lectin

MCP..... Membrane cofactor protein

MHC..... Major histocompatibility complex

MIRL..... Membrane inhibitor of reactive lysis

MR Fimbriae.....Mannose resistant Fimbriae

MSU..... Mid stream urine

MWP..... Microwell plates

NASH..... Non alcoholic steatohepatitis

NFA..... Non Fimbrial adhesin

NK..... Natural Killer cells

OGDC.....2-Oxo-glutarate dehydrogenase complex

P. aeruginosa..... Pseudomonas aeruginosa

PBC.....Primary biliary cirrhosis

PDC..... Pyruvate dehydrogenase complex

PEG..... Poly ethylene glycol

Pi..... Protease inhibitor

PIG-A..... Phosphatidyl inositol glycan A (gene)

PMNL..... Polymorphonuclear leukocytes

RID..... Radial immunodiffusion

RT-PCR.....Reverse transcriptase polymerase Chain reaction

S. aureus.....Staphylococcus aureus

SBP..... .....spontaneous bacterial peritonitis

SDS-PAGE.....Sodium dodecyl sulphate polyacrylamide gel electrophoresis

SIgA.....Secretory IgA

SPA.....Suprapubic aspiration

TGF- ß.....Transforming growth factor- ß

Th cells..... T-helper cells

THP..... Tamm-Horsfall glycoprotein

TNF-α .....Tumor necrosis factor-α

UNG.....Uracil-N-glycosylase

UTI .....Urinary tract infection

Vit.K.....Vitamine K

Contents

Page

I. Introduction.....1

II. Aim of the work.....2

III. Review of literature:

** *CHAPTER I: Urinary tract infections (UTIS)*

A) General Considerations.....3

B) Etiology.....3

C) Pathways of bacterial entry.....5

D) Predisposing factors of UTI.....5

E) Pathogenesis of UTI.....10

F) Bacteriurea..... .13

G) Common organisms of causing UTI.....15

H) Bacteriological diagnosis of UTI.....30

I) Interpretation of culture results.....42

** *CHAPTER II: Chronic liver diseases*

A) General Considerations 44

B) causes of Chronic liver diseases.....47

C) Bacterial infections in liver diseases.....83

** *Chapter III: Complement*

A) Classical pathways.....91

B) Alternative pathways.....93

C) Mannose-binding lectin pathway.....91

D) Membrane attack complex.....92

E) Regulatory protepins.....93

F) Effector functions of complement.....96

G) Complement system and CLD.....97

H) Methods of complement detection.....98

IV. Material and methods.....118

V. Results and reference tables.....142

VI. Discussion.....167

VII. Summary,conclusions and recommendations...179

VIII. References.....184

• الملخص العربى.....١-٣

List of tables

Table (A): Classification of bacteria on the basis of their relationship to 02 and C02.

Table (B): Summary of immunological techniques.

Table (C): Genetic complement deficiencies and disease association.

Table (1): Number and percent distribution of the studied subjects in relation to age, sex, presence of symptoms of UTI and the state of liver disease.....

Table (2): Results of liver and kidney function tests among chronic liver disease patients and controls.....

Table (3): The occurrence of urinary tract infection among the studied CLD patients and controls.....

Table (4): The occurrence of urinary tract infection among the studied CH and LC patients.....

Table (5): The prevalence of UTI among cirrhotic patients of different Child- Pugh class and controls.....

Table (6): Comparison between the different studied patient groups and controls regarding the presence of UTI.....

Table (7): Urine analysis findings among CLD patients with and without UTI...

Table (8): Serum levels of complement components (C3 & C4) among CLD patients with and those without UTI and control group.....

Table (9): Serum level of complement components in patients with CLD compared to the control group.....

Table (10) Comparison of the complement component C3 between LC and CH patients.....

Table (11) Comparison of the complement component C4 between CH and LC patients .....

Table (12) Comparison of the levels of both C3 and C4 in cirrhotic patients according to Child – Pugh classification.....

Table (13) Correlation between both C3 and C4, and the liver function tests in CLD patients.....

Table (14): The causative microorganisms of UTI among patients with CLD.....

Table (15): Antimicrobial susceptibility of the isolated strains from the urine of patients with CLD.....

List of Figures

Figure (1): Causative organisms of UTI

Figure (2): Filter paper strip

Figure (3): hepatitis B viral and subviral forms.

Figure (4): sequence of serologic markers for hepatitis B viral hepatitis

Figure (5): Typical course of acute hepatitis C infection changes in HCV RNA and serum ALT levels after acute post transfusion hepatitis C. Note that viral RNA is detectable for several weeks before anti- HCV seroconvertion.

Figure (6): The classical and alternative pathways of complement activation. The routes of activation of both pathways are shown, together with regulatory proteins.

Figure (7): Radial immunodiffusion patterns. Band of precipitation, stippled area, extends as a disk from the center of each circular well. Area of precipitation is proportional to the concentration.

Figure (8): Electrophoresis of antigen into agarose containing antibody.

Figure (9): Schematic diagram of light-scattering instrumentation showing the optic position for a turbidimeter (a), forward-scattering nephelometer (6), and right-angle nephelometer (c).

List of diagrams.

Diagram (1): The occurrence of urinary tract infection among the studied CLD patients and controls.

Diagram (2): Urinary tract infection among LC patients of different Child-pugh classification.

Diagram (3): Serum levels of C3 and C4 among CLD patients with and those without UTI and control group.

Diagram (4): The isolated microorganisms from patients with CLD and UTI.