

**A STUDY ON MICROBIOLOGY OF URINARY
TRACT INFECTION AT TRIBHUVAN
UNIVERSITY TEACHING HOSPITAL
KATHMANDU NEPAL**

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**BY
SHOVA KHANAL**

**CENTRAL DEPARTMENT OF MICROBIOLOGY
TRIBHUVAN UNIVERSITY
KIRTIPUR, KATHMANDU, NEPAL**

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RECOMMENDATION

This is to certify that **Ms. SHOVA KHANAL** has completed this dissertation work entitled “**A STUDY ON MICROBIOLOGY OF URINARY TRACT INFECTION AT TRIBHUVAN UNIVERSITY TEACHING HOSPITAL KATHMANDU NEPAL**” as a partial fulfillment of Master of Science Degree in Microbiology under our supervision. To our knowledge, this work has not been submitted for any other degree.

Dr. Anjana Singh

Assoc. Prof. and Head of the
Department
Central Department of Microbiology
Tribhuvan University, Kathmandu

Mr. Binod Lekhak

Assistant Professor
Central Department of Microbiology
Tribhuvan University, Kathmandu

Prof. Dr. Bharat Mani Pokhrel

Head of Department of
Microbiology, Institute of
Medicine, TUTH
Kathmandu.

Date:

CERTIFICATE OF APPROVAL

On the recommendation of **Dr. Anjana Singh, Prof. Dr. Bharat Mani Pokhrel and Mr. Binod Lekhak** this dissertation work of **Ms. Shova Khanal** is approved for the examination and is submitted to the Tribhuvan University in the Partial fulfillment of the requirement for **Master of Science Degree in Microbiology**.

Anjana Singh, Ph.D.
Head of Department
Central Department of Microbiology
Tribhuvan University
Kirtipur, Kathmandu
Nepal

Date:

BOARD OF EXAMINERS

Recommended by:

Assoc.Prof. Anjana Singh, Ph.D.
Supervisor

Mr. Binod Lekhak
Supervisor

Prof. Bharat Mani Pokhrel, Ph.D.
Supervisor

Approved by:

Anjana Singh, Ph. D.
Head of the Department

Examined by:

Mr. Shrikant Adhikari
Internal Examiner

Mr. Bishnu Raj Tiwari
Microbiologist, NRCS
Central Blood Trasfusion Service
External Examiner

Date.....

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Date:

Shova Khanal

ABSTRACT

A study was conducted among patients suspected of UTI attending outpatients department and hospitalized patients of Tribhuvan University Teaching Hospital, Katmandu, Nepal. The study was conducted for three months from June 2006 to August 2006. The objectives of the study were to isolate bacteria causing UTI, to correlate bacteriuria with pyuria, to determine antibiotic susceptibility pattern of isolated organisms and to analyze the MDR strains.

One hundred and eighty five midstream urine samples collected were investigated by conventional semi-quantitative culture technique, microscopy and antibiotic susceptibility test.

Only 22.16% (41/185) of the samples showed significant bacterial growth. Slightly greater prevalence of bacteriuria was found in males (24.67%) than in females (20.37%) and higher in inpatients (29.09%) than in outpatients (19.23%). Statistically it was found that there was no significant association of significant bacteriuria in males and females ($P > 0.05$). Similarly association of presence of bacteriuria and hospitalization of patients was also found out to be statistically insignificant ($P > 0.05$). Status of bacteriuria was found higher in age group 20-30 (19.51%) followed by 30-40 (17.07%) in female and 9.75% in 20-30 and 50-60 years in male patients.

Eight different species of bacteria were isolated among which *Escherichia coli* (65.85%) was the most predominant isolate followed by *Klebsiella species* (*K. pneumoniae* and *K. oxytoca*) (12.19%), *Staphylococcus aureus* (7.32%), *Pseudomonas aeruginosa* (4.88%), *Streptococcus faecalis* (4.88%). The other organisms isolated were *Proteus vulgaris* (2.44%) and *Enterobacter species* (2.44%).

Predictors concerning pus cell count (≥ 5 /HPF) and erythrocytes count (≥ 3 /HPF) were analyzed to determine the positive predictive value (PPV) relation to the significant bacteriuria. PPV for pus cell count was found to be higher (54.38%) than that of RBC count (27.27%).

Gram-negative bacilli (excluding *Pseudomonas aeruginosa*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*) showed best susceptibility towards Nitrofurantoin (58.33%) followed by Ceftriazone (50%). Amikacin was also effective as Nitrofurantoin against *Pseudomonas aeruginosa*, *K. oxytoca*, and *K. pneumoniae*. The most effective antibiotic to overall gram-positive bacteria was found to be Novobiocin (100%) and Erythromycin (60%).

Multidrug resistance was observed in 56.09% (23/41) bacterial isolates of which the most predominant was *Echerichia coli* 62.96% (17/27) and that in *Klebsiella pneumoniae* was 50% (2/4).

Key words: urinary tract infection, pyuria, high power field, bacteriuria, multi drug resistant.

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ABBREVIATIONS

A/A	:	Acid/ Acid
ALK/A	:	Alkali/ Acid
ATCC	:	American Type Culture Collection
BA	:	Blood Agar
CDC	:	Centres for Disease Control and Prevention
CFU	:	Colony Forming Units
CONS	:	Coagulase Negative Staphylococci
DNA	:	Deoxyribonucleic Acid
EC	:	European Commission (EC)
ESBL	:	Extended Spectrum of β -lactamase
Gm	:	Gram
HPF	:	High Power Field
H ₂ S	:	Hydrogen Sulphide
hrs	:	Hours
LF	:	Lactose fermenting
MA	:	MacConkey Agar
MBC	:	Minimum Bactericidal Concentration
MDR	:	Multi-drug Resistant
MHA	:	Mueller Hinton Agar
MIC	:	Minimum Inhibitory Concentration
μ g	:	Microgram
μ m	:	Micrometer
ml	:	Milliliter
mm	:	Millimeter
MR /VP	:	Methyl Red /Voges Proskauer
MSU	:	Midstream Urine
MSU	:	Midstream Urine
NA	:	Nutrient Agar

NCCLS	:	National Committee for Clinical Laboratory Standards
NCCLS	:	National Committee for Clinical Laboratory Standards
NIH	:	National Institute for Health
NLF	:	Non-lactose Fermenting
O/F	:	Oxidative/ Fermentative
OPD	:	Out Patient Department
PPN	:	Predictive Value of Negative Test
PPV	:	Predictive Value of Positive Test
RBC	:	Red Blood Cells
rmp	:	Revolution per Minute
SIM	:	Sulphide Indole Motility
TSI	:	Triple Sugar Iron
TUTH	:	Tribhuvan University Teaching Hospital
UTI	:	Urinary Tract Infection
VP	:	Voges Proskauer
WBC	:	White Blood Cells
WHO	:	World Health Organization