URINARY TRACT INFECTION IN CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS

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In Partial Fulfillment of the Requirements for the Award of the Degree of

Master of Science in Microbiology

(Environment and Public Health)

By

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RECOMMENDATION

This is to certify that **Mr. Bibas Basnet** has completed this dissertation work entitled **"Urinary Tract Infection in Chronic Kidney Disease Patients Undergoing Hemodialysis"** as a partial fulfillment of the requirements of M.Sc. degree in Microbiology (Environment and Public Health) under our supervision. To our knowledge this work has not been submitted for any other degree.

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ABSTRACT

Hemodialysis patients are more susceptible to urinary tract infection (UTI). The frequent receipt of antimicrobials for treatment of the infections has added the antimicrobial resistance hazard. Hence, the study was aimed to determine and describe the status of UTI in hemodialysis patients and to assess the antimicrobial susceptibility pattern of the isolated organisms. This descriptive cross sectional study was conducted in National Kidney Centre (NKC), Banasthali from November 2011- May 2012. The overall prevalence of UTI in hemodialysis was about one-fourth (22.6%, 31/137). The symptomatic UTI (54.8%) was more prevalent than asymptomatic UTI. The highest prevalence of UTI was found in females (24.5%) as compared to males (21.6%) however, the difference is statistically insignificant. The highest growth rate (22.6%) was found in the age group 71-80 years. The Gram negative organisms were more frequently isolated than Gram positive organisms. The organisms isolated were *E. coli* (32.2%), Coagulase Negative *Staphylococci* (22.6%), *Klebsiella pneumoniae* (12.9%), *Staphylococcus aureus* (9.7%), *Morganella morganii* (6.5%), *Proteus mirabilis* (6.5%), *Streptococcus* spp. (6.5%) and *Candida albicans* (3.2%). It is noteworthy fact that the more frequently used antimicrobials for gram-negative organisms like Nalidixic acid, Cephalexin, Cefoxitin, Cotrimoxazole, Norfloxacin and Ofloxacin revealed lowest levels of sensitivity (<30%). In contrast, Amikacin, Nitrofurantoin and Imipenam demonstrated the best sensitivity and most consistent activity (>70%). Almost, one-fourth of the hemodialysis patients were prone to UTI and antimicrobial resistance epidemic. Therefore, a regular screening of UTI and monitoring of antimicrobial susceptibility rates by standardized sampling and measurement procedures is necessary.

Keywords: UTI, prevalence, hemodialysis, antimicrobial resistance.

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ABBREVIATIONS

ARF-	Acute Renal Failure
ASM-	American Society of Microbiology
AST-	Antibiotic Susceptibility Test
BA-	Blood Agar
CKD-	Chronic Kidney Disease
CLSI-	Clinical Laboratory Standard Institute
CONS-	Coagulase Negative *Staphylococci*
CRF-	Chronic Renal Failure
DM-	Diabetes mellitus
ESRD-	End Stage Renal Disease
HPF-	High Power Field
HTN-	Hypertension
LF-	Lactose Fermenting
MA-	MacConkey Agar
MHA-	Mueller Hinton Agar
MIC-	Minimum Inhibitory Concentration
MR/VP	Methyl Red/Voges Prauskaur
MRSA-	Methicillin-Resistant *Staphylococcus aureus*
NA-	Nutrient Agar
NKC-	National Kidney Centre
RRT-	Renal Replacement Therapy
SIM-	Sulphide Indole Motility
TSI-	Triple Sugar Iron
UTI-	Urinary Tract Infection
VRE-	Vancomycin-Resistant *Enterococci*
VUR-	Vesicoureteral Reflux