CARDIOVASCULAR RISK PROFILE OF KIDNEY TRANSPLANT RECIPIENTS AT THE CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

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A dissertation submitted to the Faculty of Health Sciences University of Witwatersrand, Johannesburg, in fulfillment of the requirements for the degree of

Master of Science in Medicine

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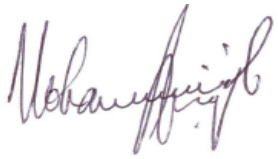
DECLARATION

I, Muhammad Aminu Sakajiki, declare that this dissertation is my own work. It is being submitted for the degree of Master of Science in Medicine in the Division of Nephrology in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.



MUHAMMAD AMINU SAKAJIKI

July, 2013

DEDICATION

I dedicate this work to:

The end-stage renal disease patients in sub-Saharan Africa and their relatives who struggle to pay for renal replacement therapy that is not readily available and where available, is not affordable.

My wife and children, who endured through my absence from the house in the course of this work.

PUBLICATIONS AND PRESENTATIONS ARISING FROM THIS STUDY

1. Aminu MS, Naicker S, Naidoo S, Maranga BM, Britz R, Manga P, Nazir MS. Carotid intima-media thickness and cardiovascular risk factors in kidney transplant recipients. World Congress of Nephrology, Hong Kong, June 2013 (accepted for presentation).

2. Aminu MS, Naicker S, Naidoo S, Maranga BM, Britz R, Manga P, Nazir MS. Obesity and graft outcome among kidney transplant recipients in a South African public hospital. World Congress of Nephrology, Hong Kong, June 2013 (accepted for presentation).

3. Aminu MS, Naicker S, Naidoo S, Maranga BM, Britz R, Manga P, Nazir MS. Left ventricular hypertrophy in kidney transplant recipients at Charlotte Maxeke Johannesburg Academic Hospital, South Africa. World Congress of Nephrology, Hong Kong, June 2013 (accepted for presentation).

4. Aminu MS, Naicker S, Naidoo S, Maranga BM, Britz R, Manga P, Nazir MS. Proteinuria, graft outcome and cardiovascular risk among kidney transplant recipients in a South African public hospital. Nigerian Association of Nephrology Conference (NANCOF), Abuja, Feb 2013 (accepted for presentation).

ABSTRACT

INTRODUCTION

Cardiovascular diseases (CVD) are more common in kidney transplant recipients (KTRs) than in the general population. The high incidence of CVD in the KTRs can be attributed to traditional risk factors, additional risk factors associated with graft dysfunction and those specifically related to transplantation.

Carotid intima-media thickness (cIMT) is a proven surrogate of atherosclerosis; it correlates with vessel pathology and is precisely imaged using ultrasound technology.

This study was aimed at determining the prevalence and predictors of cardiovascular risk among KTRs at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) and to examine the relationship between cardiovascular risk factors and carotid intima media thickness.

METHODS

Patients aged 18 years and above who received a kidney transplant at the CMJAH between January 2005 and December 2009 were recruited. A questionnaire that captured cardiovascular risk factors was administered. Patients records were assessed for information on their post transplant follow up. All patients had echocardiography and carotid doppler done for measurement of intima-media thickness. The Framingham Risk Score was used to categorize patients into low, moderate, high risk and very high risk groups. Results were analyzed using statistical package for social sciences (SPSS) version 17, p value of 0.05 was considered significant.

RESULTS

One hundred (KTRs) 63 male (63%) and 37 female (37%) were recruited ranging in age from 19 to 70 years, with a mean age of 42.2 ± 12.42. Thirty six patients (36%) were found to have high cardiovascular

risk. Multiple regression showed proteinuria ($p = 0.022$), higher cumulative steroid dosage ($p = 0.028$), elevated serum triglycerides ($p = 0.04$) and the presence of plaques in the carotid artery ($p = 0.012$) as predictors of higher cardiovascular risk.

Carotid intima-media thickness correlates with higher CVD risk. Fourteen patients (14%) had a carotid artery plaque. Twenty five patients (25%) had cIMT of >0.7 mm.

CONCLUSION

Kidney transplant recipients in CMJAH were found to have high cardiovascular risk (36%) and carotid intima-media thickness correlates with this high CVD risk. Routine follow up of KTRs should include measurement of cIMT as it provides a simple noninvasive assessment of subclinical atherosclerosis.

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- The kidney transplant recipients of the CMJAH for enthusiastically participating in this study.

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NOMENCLATURE

AVF	Arteriovenous Fistula
ALERT	Assessment of Lescol in Renal Transplantation
AMVL	Anterior mitral Valve Leaflet
AT	Acceleration Time
BSA	Body Surface Area
CVD	Cardiovascular Disease
CNI	Calcineurin Inhibitors
CIMT	Carotid Intima-Media Thickness
CAD	Coronary Artery Disease
CRP	C - reactive protein
CMJAH	Charlotte Maxeke Johannesburg Academic Hospital
DBP	Diastolic Blood Pressure
DT	Deceleration Time
ESRD	End Stage Renal Disease
FHS	Framingham Heart Study
GFR	Glomerular Filtration Rate
HF	Heart Failure
HDL	High Density lipoprotein
HbA1C	Glycosylated Haemoglobin
IHD	Ischaemic Heart Disease
IVSTD	Inter Ventricular Septal Thickness in Diastole
JNC	Joint National Committee

KTR	Kidney Transplant Recipients
KDOQI	Kidney Disease Outcome Quality Initiative
LDL	Low Density Lipoprotein Cholesterol
LVH	Left Ventricular Hypertrophy
LVEDD	Left Ventricular Internal Dimension in End – Diastole
LVESD	Left Ventricular Internal Dimension in End Systole
LVPWTD	Left Ventricular Posterior wall thickness in diastole
LVM	Left Ventricular Mass
LVMI	Left Ventricular Mass Index
MI	Myocardial Infarction
MAP	Mean Arterial Pressure
NRT	Nicotine Replacement Therapy
NCEP III	National Cholesterol Education Project Plan III
NHLS	National Health Laboratory Service
PVD	Peripheral Vascular Disease
RWT	Relative Wall Thickness
SPSS	Statistical Package for Social Science
SD	Standard Deviation
SBP	Systolic Blood Pressure
T2DM	Type 2 Diabetes Mellitus
T1DM	Type 1 Diabetes Mellitus
TOD	Target Organ Damage
UPCR	Urine Protein Creatinine Ratio

VLDL Very Low Density Lipoprotein