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PREVALENCE OF PROTEINURIA AMONG HIV PATIENTS ATTENDING THE HIV CLINIC AT BENUE STATE UNIVERSITY TEACHING HOSPITAL, MAKURDI, NORTH CENTRAL, NIGERIA

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ABSTRACT

HIV positive patients are at an increased risk for chronic kidney disease. HIV related renal diseases are common causes of chronic kidney disease globally. Proteinuria is a marker of kidney damage and a risk factor for progression to end stage renal disease. This study aimed to investigate the prevalence of proteinuria among HIV patients seen at Benue State University Teaching Hospital, Makurdi. **Objectives:** To determine the prevalence of proteinuria among HIV infected patients attending HIV clinic at Benue State University Teaching Hospital (BSUTH), Makurdi, Nigeria. **Methods:** One Hundred and fifty two HIV patients and 65 age and sex matched non-HIV controls were recruited from the HIV clinic and Medical Outpatient Department of BSUTH, Makurdi respectively. **Results:** Out of 152 HIV subjects, 43 were males while 109 were females. The mean age of the subjects was 37.02 ± 9.3. Urine protein creatinine ratio > 0.2g/day was present in 69(45.4%) of the HIV patients and 16 (24.6%) of the controls P=0.000. **Conclusion:** Prevalence of proteinuria is high among HIV infected patients seen at Benue State University Teaching Hospital, Makurdi.

KEYWORDS: Human Immunodeficiency Virus (HIV), Urine Protein Creatinine Ratio (UPCR), Proteinuria.

INTRODUCTION

It is estimated that about 42 million people are infected with HIV globally.[1] About 60% of people living with HIV are in sub-Saharan Africa.[2] Chronic kidney disease (CKD) is an important comorbidity among HIV-infected Patient.[3] As the survival with HIV infection lengthens, it is expected that the population of patients with HIV infection and CKD will increase rapidly.[4] Proteinuria is an early marker of kidney damage and is far more prevalent in HIV infected patients than in non-HIV patients,[5] Proteinuria in HIV infected patients is associated with cardiovascular disease, end stage renal disease (ESRD) and mortality.[6-7] Human Immunodeficiency Virus (HIV) – related renal disease are a leading cause of ESRD among african Americans.[8] Several studies revealed that proteinuria is more prevalent among black HIV-infected patient.[9,10] In Nigeria the prevalence of proteinuria in HIV infected individuals ranges from 20 to 33%.[11-13]

Proteinuria in HIV-positive individuals is commonly associated with focal segmental glomerulosclerosis (FSGS) which is the typical biopsy finding of HIV Associated Nephropathy (HIVAN) a common cause of ESRD in Nigeria.[14,15] Another common association of proteinuria in HIV positive individuals are tubulo interstitial nephropathies caused by drugs such as Tenofovir a first line drug used in the treatment of HIV as well as non steroidal anti inflammatory drugs (NSAIDS).[16]

HIV-related renal diseases are increasingly prevalent and are associated with proteinuria and rapid progression to ESRD. Early treatment with highly active anti-retroviral therapy (HAART) and ACE inhibitors may prevent the development of chronic kidney disease (CKD) but studies evaluating the epidemiology of proteinuria and early CKD in HIV-infected patients are lacking prompting us to undertake this study.

MATERIALS AND METHODS

This was a cross- sectional study on the prevalence of proteinuria in HIV patients accessing care at Benue State University Teaching Hospital, Makurdi. The study was conducted over a 9 month period. The subjects consisted of 152 HIV positive individuals recruited from HIV

clinic. The control consisted of 65 age and sex matched HIV sero-negative individuals recruited from medical outpatient department of the hospital.

Inclusion criteria for the study included HIV positive individuals aged 18years and above and those who gave informed consent.

Exclusion criteria included pregnancy, menstruation, fever, urinary tract infection, diabetes mellitus, heart failure, chronic use of nephrotoxic drugs and individuals who refused to give consent. Ethical approval from the study was obtained from the ethical and research committee of Benue State University Teaching Hospital and written consent was obtained from subjects.

A questionnaire was used to collect relevant information including socio demographic data, medical history, and stage of HIV infection.

Investigation performed by subjects included Urine Protein Creatinine Ratio (UPCR) using spot urine sample. Significant proteinuria was defined as UPCR ≥0.2g/day.

Clear instructions were given to the subjects on how to collect the urine sample according to standard procedure.

Data analysis

The Statistical Package for Social Sciences (SPSS Inc. Chicago II) version 21.0 statistical software was used for data analysis.

Quantitative variable were expressed as means ± standard deviation while categorical variables were expressed as proportions. The t-test and the chi-square test were used in the comparison of means and proportions respectively. P-value <0.05 was considered statistically significant**.**

RESULTS

The mean age of the subject was 37±9.3 years. Of the 152 HIV positive individuals that participated in the study 46 (30.3) were males while 106 (69.7%) were females while out of the 65 control subjects (HIV negative individuals) 20 (30.8%) were males while 45 (69.2%) were males. Table 1.

Significant proteinuria (UPCR ≥ 0.2) was more common in HIV positive individuals compared with control, The percentage of proteinuria in HIV positive individuals was 45.3% compared with 24.6% of the control group (HIV negative individuals). The result was statistically significant. Table 1.

Table 1: Distribution of proteinuria in HIV subjects and Control.

Variable	HIV Subjects n=152	Control n=65	P Value
Sex			
Male	46 (30.3%)	20 (30.8%)	0.849
Female	106 (69.7%)	45 (69.2%)	
Mean Age	37 ± 9	37 ± 10	1,000
UPCR < 0.2	83	49	
1-1.9	49	9	0.000
2.3.5	15	7	
>3.5	5	0	
≥ 0.2	69 (45.3%)	16 (24.6%)	0.000

DISCUSSION

The result from our study revealed that 45.4% of HIV positive individuals and 24.6% of the non-HIV controls had proteinuria. There is marked variation in the prevalence of proteinuria among HIV-positive individuals across the globe. For instance in the United States, the prevalence of proteinuria in HIV positive individuals ranges from 14.1 to 32.0%.[17-19] Longo AL et al[20] reported a prevalence of 6.4% from a study done in Tanzania while Struik GM et al[21] reported 3.3% of proteinuric HIV infected patients in a study carried out in Blantyre, Malawi. From studies done in Nigeria, the prevalence of proteinuria in HIV infected individuals ranges from 20% to 33%.[11-13, 22]

The prevalence of 45.4% from our study is higher than that obtained from previous studies. Proteinuria in HIV infected patients have been shown in several studies to be associated with elevated HIV RNA level, decreased CD4 lymphocyte count and association with hepatitis C viral infection.[23-25] Most of our patients presented late with advanced HIV infection with markedly elevated HIV RNA levels and reduced CD4 lymphocyte count. This could explain the high prevalence of proteinuria among HIV positive individuals from our study.

Our study also showed a prevalence of 1-1.9g/day proteinuria of 32.2% in HIV patients and a prevalence of 2- ≥ 3.5g proteinuria of 13.2% in HIV patients. This finding differs from that reported by Anyabolu EN et al[26] who reported a prevalence of 18.1% for proteinuria between 1-1.9g/ day and 14.4% for proteinuria between 2-≥ 3.5g/day respectively. The difference may be due to the methodology. They used 24 hour urinary protein estimation in their study while we used spot Urinary Protein Creatinine ratio (UPCR) and also our patients

presented late-in advanced HIV with elevated RNA levels and low CD4 lymphocyte count.

CONCLUSION

The prevalence of Proteinuria among HIV positive individuals attending BSUTH Makurdi is high. This emphasizes the need for quantitative estimation of proteinuria in HIV positive individuals owing to the fact that proteinuria is a marker of chronic kidney disease, progression in CKD and cardiovascular disease. Early detection of proteinuria and commencement of measures to reduce proteinuria will reduce the rate of progression to CKD. This will greatly reduce the number of HIV positive individuals that progress to ESRD.

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