PROTEINURIA IN HIV POSITIVE PATIENTS; DETERMINE THE FREQUENCY AT A TERTIARY CARE HOSPITAL IN KARACHI

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ABSTRACT… objective: To determine the frequency of proteinuria in HIV positive patients at a tertiary care hospital in Karachi. **Study design:** Cross-sectional. **Place and duration of study:** This study was carried out in Infectious diseases wards and all medical wards of Civil Hospital Karachi, from Jan 2011 to the Dec 2011. **Methodology:** A total of 170 patients from infection diseases wards and all medical wards of Civil Hospital Karachi. Age more >12 years of either sex who were newly diagnosed cases of HIV based on positive HIV serology by ELISA and Western blot in Infection diseases ward were Included. Patients having known kidney disease. urinary tract infection, serum creatinine more than 1.5 mg/dl, diabetes mellitus, high blood pressure and old diagnosed cases of HIV who have already taken or who are taking HIV infection treatment were excluded from this study. Spot urinary sample was taken to measure the proteinuria by urine dipstick. To minimize bias all specimen sent to same laboratory of the hospital. **Results:** 170 newly diagnosed cases of HIV were included in this study. Gender distribution showed male preponderance (Male: Female = 6.4:1). Majority of cases 120 (70.6%) had age between 26 – 50 years. Mean age of women was 30.3 ±7.4 years (min – max = 18 – 45 years) and for males was 34.3 ±9.6 years (min – max = 15 – 56 years). Out of 170 HIV positive cases frequency of > 1+ protein in urine on urine dipstick analysis was found in 27 (15.9%) cases. Out 27 cases, 16 (59.3%) cases had age between 26-50 years (mean ±SD = 32 ±10.1 years, min – max = 18 – 55 years). Proteinuria was high in increasing age groups. Proportion of proteinuria was high in married and depressed patients , out of 27 cases, 18 (66.7%) were married and 9 (33.3%) unmarried. Frequency of proteinuria was high in labor class, 11 of 27 (40.7%) were labors followed by house wife 6 (22.3%), while 5 (18.5%) were private job holder. **Conclusions:** In this study I found a high prevalence of proteinuria in HIV positive patients. Such subjects show male preponderance distribution. We conclude that HIV positive patients should be screened for proteinuria and if they found to have proteinuria, they should be subjected to appropriate treatment to retard the progression of nephropathy and associated complications.

Key words: Human Immunodeficiency virus (HIV), proteinuria, Kidney, nephropathy, AIDS.

INTRODUCTION

Human Immunodeficiency virus infection is a complicated and hugely important world issue. In 2009, an estimated 33.2 million HIV-infected people lived throughout world, and approximately 2.1 million people were died[1]. HIV infection is the ninth leading cause of death in adult ages 25-44 years and more than 95 percent of all HIV-infected people now live in developing countries[2]. The 2006 Situation and Response Analysis reported an estimated 75,000 persons living with HIV in Pakistan[3]. The South Asian location of Pakistan with lifestyle risk factors suggest that Pakistan will experience expanded diffusion of HIV[4].

HIV infection affects all body organs including kidneys. Kidney disease is an increasingly important cause of illness and death in HIV positive patients[5]. HIV associated nephropathy (HIVAN) is the most common form of kidney disease among HIV infected individuals[6]. Proteinuria in HIV infected patients is an early marker of HIV associated nephropathy[7,8] and is a major determination of progression of renal disease[9]. HIV positive patients show that proteinuria is associated with

a double in the risk of death[10]. Proteinuria increases HIV positive individual's risk of hospitalization by 50% and their risk of cardiovascular illness by 40%[11]. In a study in Iran 171 HIV positive patients were screened for proteinuria, out of which 21 (12.3%) patients had proteinuria on urine dispstick[12].

The infectious disease society of America recommends that all patients at the time of HIV diagnosis should be assessed for kidney disease with screening urine analysis for protienuria and patients with proteinuria should be referred for early treatment to prevent kidney failure in these patients[13]. In Pakistan HIV is increasingly prevalent and there is need of study to see frequency of proteinuria in our patients so as to know the burden of disease and to develop strategies. The objective of this report was; to determine the frequency of proteinuria or elevated serum creatinine in HIV-positive.

MATERIAL AND METHODS

This study was conducted at Infection diseases ward and all medical wards of Civil Hospital Karachi from Jan 2011 to the Dec 2011. This study consisted of 170 cases of HIV positive patients. Age more >12 years of either sex who were newly diagnosed cases of HIV based on positive HIV serology by ELISA and Western blot in Infection diseases ward were Included. Patients having known kidney disease. urinary tract infection, serum creatinine more then 1.5 mg/dl, diabetes mellitus, high blood pressure and old diagnosed cases of HIV who have already taken or who are taking HIV infection treatment were excluded from this study. Spot urinary sample was taken to measure the proteinuria by urine dipstick. To minimize bias all specimen sent to same laboratory of the hospital.

RESULTS

A total of 170 newly diagnosed cases of HIV were included in this study. Gender distribution showed male preponderance (Male: Female = 6.4: 1), as there were 147 (86.5%) males and 23 (13.5%) females. Figure-1.

Average age of the patients was 33.8 ±9.4 years (ranging from 15 to 56 years). Majority of cases 120 (70.6%) had age between 25 – 50 years. Mean age of women was 30.3 ±7.4 years (min – max = 18 – 45 years) and for males was 34.3 ±9.6 years (min – max = 15 – 56 years). Age distribution with respect to gender presented. Mostly patients, 105 (61.8%) were married and 65 (38.5%) were un-married (Figure-2).

Fig-1. Age distribution with respect to gender (n=170)

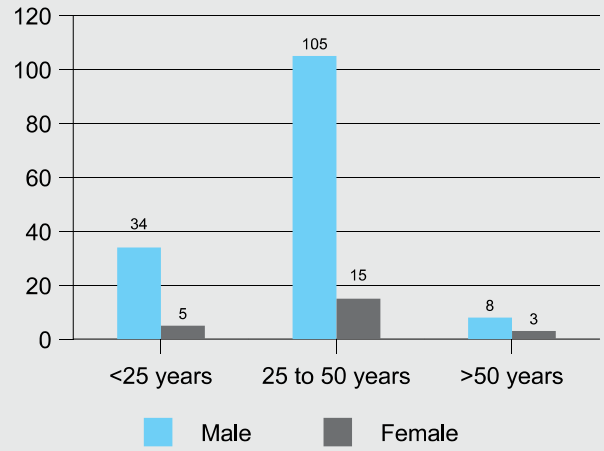
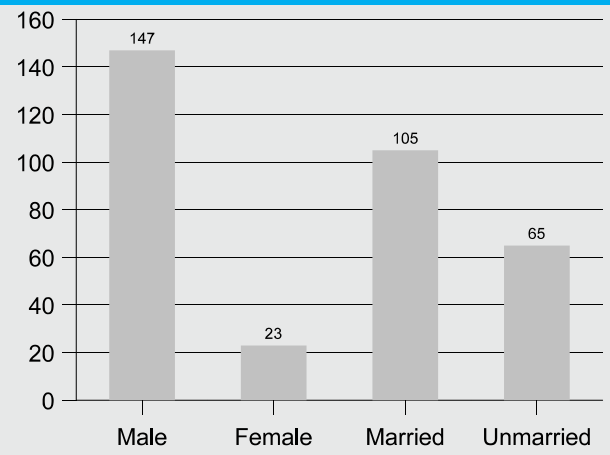


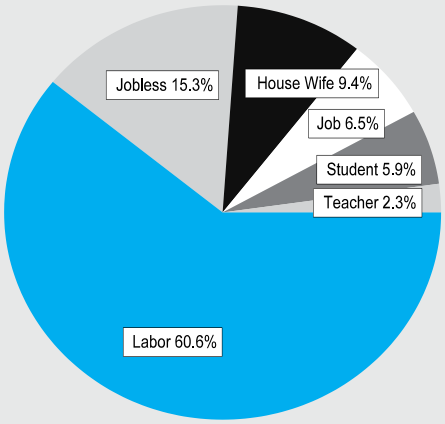
Fig-2. Martital status and gender distribution (n=170)



Out of 170 cases, 103 (60.6%) patients were labor while 26 (15.3%) cases were jobless, 16 (9.4%) were housewives, 11 (6.5%) patients were doing private jobs of various levels (Managers, doctors, computer operators etc.), 10 (5.9%) were students while 4 (2.3%) were teachers (Figure-3).

Out of 170 HIV positive cases frequency of > 1+ protein in urine on urine dipstick analysis was found in 27 (15.9%) cases. Out 27 cases, 16 (59.3%) cases had age between

Fig-3. Occupation of patients



26-50 years (mean ±SD = 32 ±10.1 years, min – max = 18 – 55 years) (Table-I). Proteinuria was high in increasing age groups. Proportion of proteinuria was high in married and depressed patients, out of 27 cases, 18 (66.7%) were married and 9 (33.3%) unmarried. Frequency of proteinuria was high in labor class, 11 of 27 (40.7%) were labors followed by house wife 6 (22.3%), while 5 (18.5%) were private job holder. Distribution of proteinuria in occupation presented in table-I.

Table-I. Different characteristics of proteinuria

Variable	No. of patients	%age
Presence of proteinuria in patients with HIV (n=170)		
▸ Yes	27	15.9%
▸ No	143	84.1%
Presence of proteinuria in age groups (n=27)		
▸ <25 years	09	33.3%
▸ 26 to 50 years	16	59.3%
▸ >50 years	02	7.4%
Presence of proteinuria in gender (n=27)		
▸ Male	20	74.1%
▸ Female	07	25.9%
Distribution of proteinuria according to marital status (n=27)		
▸ Married	18	66.7%
▸ Unmarried	09	33.3%
Distribution of proteinuria according to occupations (n=27)		
▸ Labor	11	40.7%
▸ House Wife	06	22.3%
▸ Job	05	18.5%
▸ Jobless	03	11.1%
▸ Teacher	01	3.7%
▸ Student	01	3.7%

DISCUSSION

Glomerular involvement in HIV patients has been detected since the beginning of the 80s. Two appraisals published in 1984 represent a landmark in describing glomerular disease within this group[13]. Other studies have shown various types of glomerular disturbances in HIV/AIDS patients, including: minimal change disease, mesangial proliferative, membranoproliferative, and membranous glomerulonephritis, IgA nephropathy, lupus-like glomerulonephritis, thrombotic microangiopathy, fibrillary glomerulonephritis and immunotactoid glomerulopathy[14]. The clinical and laboratory characteristics of HIV associated nephropathy (HIVAN) are severe proteinuria, an absence of arterial hypertension, hematuria and edema, with rapid progression to chronic-renal insufficiency[15].

Persistent proteinuria is the principal marker of glomerular disease in HIV/AIDS patients and should be used for early identification of HIVAN[16]. Certain factors associated with HIVAN, include: a CD4 lymphocyte count <200 cells/mm^3, a viral load of >100,000 copies/mL, and co-infection with hepatitis C; these factors also are related to poor prognosis in terms of renal function and to increased mortality[17]. Among patients with HIVAN, severe proteinuria (often in the nephrotic range >3 g/day) with progression to ESRD within 1–4 months of diagnosis was initially described[18].

In ourstudy, the proportion of proteinuria was 15.9%, which is comparable with other studies. In 2001, Hailemariam et al[19], in Zurich (Switzerland), reported a prevalence of 18% (among 239 patients), and Crowley et al., in 2001 in New Haven (USA), described persistent proteinuria in 14% of 49 patients[20], However, Ahuja et al. found low proteinuria in 6.8% of 557 patients studied in Texas (USA) in 1999[21], some variation appears to reflect distinct situations. The former studies involved referred-

nephrology patients; one of the studies was done prior to HAART use, which was introduced into clinical practice in 1996. The later study was not similar to my investigation, since it involved an entire population with HIV/AIDS, nearly all of who had been receiving HAART.

Another study reported very high prevalence 38% of proteinuria in HIV positive cases[22] while some other studies by Winston et al[23] and Szczech et al[24] reported similar proportion of proteinuria. The mean age of patients with proteinuria in my study was 32 ±10.1 years which is very similar to those with HIVAN found in other studies, possibly because this is the peak period of sexual activity[24,25].

Among proteinuria cases in my study gender distribution showed very high preponderance of male 74.1% (Male: Female = 2.9: 1), in parallel to the very high preponderance of male HIVAN reported by some authors. While another study reported the M: F ratio nearly 1:1[22]. High preponderance of proteinuria in male in my study may be because major proportion of male patients in my study. Out of 170 patients in my study a total of 147 patients were male concluding 86.5%.

Proportion of proteinuria was high in married patients, out of 27 cases, 66.7% were married 33.3% unmarried. Frequency of proteinuria was high in labor class, 11 of 27 (40.7%) were labors followed by house wife 22.3%, while 18.5% were private job holder. Although no clinical practice guidelines exist for the evaluation of HIV-infected patients with renal dysfunction, considering the high incidence of HIVAN in such patients, it would be appropriate to perform a simple urinalysis at their initial visit. Annual follow-up examinations of individuals in high-risk groups may be justified. Proteinuria should be quantified with a protein/creatinine ratio performed on a spot urine sample, and CD4 and HIV RNA levels should be measured if facilities are available.

Once renal disease has becomes established, it provokes a quick and progressive loss of renal function. Early diagnosis is not a simple matter, since the glomerular lesion associated with HIV rarely presents clinical signs. The intensity of the tubular-interstitial lesions is responsible for the nephropathy salt loss, which is why these patients do not present serious edemas, in spite of the high proteinuria.

CONCLUSIONS

We conclude that the prevalence of proteinuria in HIV positive patients is high. Such subjects show male preponderance distribution. The high frequency of proteinuria occurred in the HIV positive cases indicates the importance of closely monitoring serum and urine chemistries in HIV-infected patients, especially those with risk factors for renal dysfunction. It would be appropriate to perform a simple urinalysis at their initial visit. Annual follow-up examinations of individuals in high-risk groups may be justified. Proteinuria should be quantified with a protein/creatinine ratio performed on a spot urine sample, and CD4 and HIV RNA levels should be measured if facilities are available.

RECOMMENDATIONS

From the results of this study it was found that significant proteinuria is present in HIV positive patients in our population. As at this stage HIV associated nephropathy is potentially reversible, it is therefore recommended that all HIV positive patients should be screened for proteinuria and if they found to have proteinuria, they should be subjected to appropriate treatment to retard the progression of nephropathy and associated complications.

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