ABSTRACT

BACKGROUND

HIV related renal disease is a common occurrence in patients with HIV infection. It is the 3rd leading cause of end stage renal disease among African American males between 20 and 64 years in USA. Renal function impairment has been reported at all stages of HIV infection. The study is aimed to determine the relationship between severity of renal function impairment and CD4 cell count in HIV infected patient.

SUBJECTS AND METHOD

HIV seropositive patients presenting at University of Benin Teaching Hospital (out/inpatients) from 1st January 2007 to 30th June 2007 were randomly screened for renal function impairment (RFI) using glomerular filtration rate (GFR) and protein creatinine ratio (PCR). Those with renal function impairment (GFR < 60ml/min/1.73m² or PCR ≥ 200) were selected, and they were stratified into mild (GFR ≥ 60ml/min/1.73m² but PCR ≥ 200), moderate (GFR 30 to 59ml/min/1.73m²) and severe (GFR < 30ml/min/1.73m²/min/1.73m²) RFI. Forty patients from each stratum were recruited by simple random sampling for the study. Forty HIV infected patients with normal renal functions (GFR >60ml/min/1.73m² and PCR < 200) were also recruited as control. Ethical clearance was obtained from the ethical committee of the hospital. Patients were evaluated clinically, and laboratory investigation including serum creatinine, urea, albumin; urine protein and creatinine; and CD4 cell count were evaluated. The GFR was estimated using 6 variable of Modification of Diet in Renal Disease (MDRD) equation. The urinary protein excretion was estimated using urine protein creatinine ratio of spot urine. The data was analysed using SPSS 13.0.
RESULTS

The mean age of subjects studied were 35.6±8.3, 36.0±9.9, and 36.3±8.3 years for patients with mild, moderate, and severe RFI respectively. The male to female ratio was 1:1.

The laboratory parameters showed that patients with severe RFI had more severe anaemia with mean Packed Cell Volume (PCV) of 22.71±6.77%; azotaemia with mean serum creatinine (SCr) of 598.51±379.38umol/l and mean serum urea of 17.77±13.10mmol/l; hypoalbuminaemia with mean serum albumin of 29.80±7.66g/l and proteinuria with mean PCR of 2419.45±2151.09. They also had hyponatraemia with mean serum sodium of 129.72±9.41mmol/l; lowest mean GFR of 14.86±7.96ml/min/1.73m². The differences were statistically significant in all the above parameters.

The distributions of CD4 cell count were 319.05±248.41/ul, 309.75±268.71/ul, 188.45±173.12/ul, and 141.10±126.01/ul for control, mild RFI, moderate RFI and severe RFI respectively showing that patients with severe RFI had the lowest CD4 cell count. Majority of patients with moderate and severe RFI had CD4 cell count less than 200/ul, but patients with mild RFI, and control had CD4 cell count 200/ul and above. These were statistically significant. (p = <0.001). Patients with GFR of less than 60ml/min/1.73m² had mean CD4 cell count less than 200/ul, and patients with GFR 60ml/min/1.73m² and above had mean CD4 cell count above 200/ul. The difference was statistically significant (p = <0.001)

The distribution of CD4 cell count showed that patients with nephrotic range proteinuria had the lowest CD4 cell count but the difference was not significant. (p = 0.155) The mean CD4 cell count
was lower in patients with serum creatinine level above 500umol/l than in patients with serum creatinine level below 120umol/l. This difference was statistically significant. (p = <0.001)

Pearson correlation showed that CD4 cell count had a significant positive correlation with GFR (r = 0.32 and p = 0.042). There was no correlation between CD4 cell count and proteinuria in this study.

**CONCLUSION**

Renal disorder in HIV infected patients is common. Severity of RFI correlated with CD4 cell count in HIV infected patients with subjects with severe RFI having mean CD4 cell count less than 200/ul.