



# *Discussion*

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The present study comprises of 40 SERO-POSITIVE HIV infected patients having Cardiovascular system and renal manifestations of HIV/AIDS, both indoor & outdoor at SSG Hospital, Vadodara from NOV 2008 to NOV 2010.

### 1) Age and sex distribution of 40 sero-positive HIV infected patients with cardiac and renal manifestations

As described in **TABLE-1**, in this study, 34 (85%) patients were males as compared to 6 (15%) were females. The age range was from 20 to 68 years. The maximum number of patients were from age group of 31 to 50 years, 18 (45%) were males, 3 (7.5%) were females and total were 21(52.5%) from total of 40 patients.. Beyond 50 years, number of patients were less and amongst them 7 (17.5%) were male and 1 (2.5%) were females. This shows that male to female ratio was around 5.5:1.

Above can be due to the fact that majority of individuals in this group are sexually active reflecting the predominance of sexual mode of transmission of HIV. Male preponderance can be explained by – increased incidence of sexual promiscuity among males and more number of males approaching health care facilities for medical problems as compared to females

### A) Sex and age distribution among **CARDIAC PATIENTS**

**TABLE-2** describes , among cardiac patients of total 20 , 17 (85%) were males and 3 (15%) female. In this group maximum

number of patients were found in age group 21-40 which were 10(50%) of total. Here male to female ratio was 5.6:1.

**B) Sex and age distribution among RENAL PATIENTS.** In **TABLE-3** , the renal group total 22 patients (20 of isolated renal and 2 of combined cardiac and renal) were taken among these 19(86.6%) were male and 3(13.5%) were female with maximum patients in the age range of 31-40 i.e total 16 (male and female) comprising 70% of total. Here male female ratio was 6.3:1.

## **2) Symptoms :**

As per **GRAPH 4**, dyspnoea, pedal edema and oliguria were the commonest symptoms in patients under study of renal and cardiac complication. Dyspnoea was present in 23 (57.5%) patients. Pedal edema as a presenting symptom was present in 28 (70%) patients. 29(72.5%) patients presented with oliguria. Orthopnea and palpitation were presenting symptoms in 6 (15%) patients .1 patient presented with convulsion and 1 with altered sensorium.

Dyspnoea and pedal edema were the commonest symptoms in almost every patient in this study. This explains that in SERO-POSITIVE patients symptoms of cardiac and renal disease are not different from those of general population and thus these are not helpful in diagnosing sero-positivity.

## **3) Sexual exposure.**

**TABLE-4** describes ,among 40 patients of HIV, 15 (37.5%) of patients were heterosexually promiscuous and none of them was homosexual. However, 21 patients have only one sex partner during their

lifetime, comprising 52.5 % of study patients. Among 40 patients, 9 had a history of blood transfusion, One (2.5%) patient had a history of needle injury in past.

This explains that in spite of global education regarding safe sexual activity, sexual route is still a common mode of transmission.

#### **4) HIV/AIDS status of the patients.**

**TABLE-5** Describes, at the time presentation 21 patients were already been diagnosed to have HIV/AIDS in the past. 2 of them were not taking the treatment due to variable reasons ignorance being most common. 19 patients were diagnosed freshly to have HIV/AIDS and with presenting symptoms in the form of pedal edema and oliguria.

**A)** Of the total 20 patients with cardiac manifestations 13 already were diagnosed to have HIV, while 7 were freshly detected .

**B)** Of the 22 (2 patients had combined renal and cardiac manifestations ) patients with renal involvement 12 were freshly detected HIV positive , while 10 were previously diagnosed to have HIV.

Since from among the patients who were freshly detected, we had no clue since when patient was sero-positive due to non availability of prior reports of HIV ELIZA, actual relationship of these manifestations with duration could not be calculated

#### **5) Past history.**

As per above **TABLE-6**, 16 (40%) patients have past or present history of pulmonary tuberculosis. This explains that tuberculosis is one

of the commonest opportunistic infection in patients of HIV/AIDS particularly in 3<sup>rd</sup> world where tuberculosis is more prevalent due to a variety of causes. 9 patients (22.5%) had history of blood transfusion. Not a single patient in the study had history of intravenous drug addiction. One patient had accidental needle prick.

#### **6) General examination**

**TABLE-7** describes, in general examination, pallor was the commonest general examination finding in these patients and it was present in 29 (72%) of patients. This was followed by Pedal edema 27(67%). Oral candidiasis was present in 19 (47%). Raised JVP was seen in 17 patients(42%) .Oral candidiasis is one of the commonest opportunistic infection. Pallor was due to anemia secondary to HIV itself or due to drug therapy. Pedal edema was seen both due to cardiovascular involvement and renal involvement as well as due to other reasons such as hypoproteinemia.

#### **7) Haemogram analysis.**

**In TABLE-8** ,Out of 40 patients, 11 (27.5%) had leucopenia and mostly due to direct effect of HIV/AIDS. Anemia was present in almost all the patients and severity was dependent on chronicity of the disease and other associated illnesses. Among total anemic patients 6( out of 17 ) ie 35% , with hemoglobin less than 8 and 4( out of 16) ie 25% with Hb 8 -10 gm% were on zidovudine . Thus total 10 ( 31.4% with Hb < 10gm%) patients had hemoglobin less than 10 were on zidovudine . Mean Hb was 8.26gm%.

Among renal group 4 patients were on stavudine and all had Hb<8gm% this shows that this anemia can be attributed to renal cause directly,

however among 12 patients freshly detected of renal manifestations not on therapy 5 had Hb<8gm% and 5 had Hb between 8-10 gm%, again not considering the role of zidovudine this anemia cause of renal disease itself.

#### **8) Urinary Albumin and analysis**

**In TABLE-9** of total 40 patients 12 had urinary albumin 1+(30%) and 3 had 2+ , while 3+ or more was seen in 9(22.5 %)patient. Of 22 renal patients 10(45.4%) had 1+ alb while 3(13.6%) had 2+ albumin while 9(40.9%) had 3+ or more urinary albumin. 4 of 20 cardiac patients had urinary albumin positive(of these 2 had combined renal and cardiac manifestations). This suggests that even mild protienuria was present even in patients without symptom for renal disease thus if all the HIV patients are screened for urinary protienuria than many asymptomatic cases can be diagnosed.

**9) GLOMERULAR FILTRATION RATE among total and renal patients. GRAPH-6,7,** of total 40 patients 15(37.5%) patients had GFR between 15-29 ml/min, 9(22.5 %) had between 30-59ml/min,7(23.33%) had between 60-89ml/min and 3(7.5%) each had <15 and >90ml/min

**A)** Among renal group 15(68.9%) of patients had GFR between 15-29, while 3(13.6%) had GFR of <15 , there were no patients in renal group with GFR >60.

**10) CD4 Count and correlations:** **TABLE-10,11** describes, out of 40 patients 33(82%) patients had CD4 count <200/mm<sup>3</sup> & 7(17.5%) patients had CD4 count > 200/mm<sup>3</sup>. Average CD4 count was 126/mm<sup>3</sup>.

**A) CD4 count and cardiac manifestations -a correlation**

Of total 20 patients with cardiac involvement 15(75%) had CD4 count less than 99. 3 (15%) had CD4 count between 100-199, while only 1(10%) had CD4 >200. This shows that cardiac manifestations were a late feature of HIV/AIDS and suggesting that lower goes the CD4 lymphocyte count the likelihood of the cardiac involvement in HIV increases .

**B) CD4 count and renal manifestations -a correlation**

Of total 22 patients with renal manifestations 12(60%) had CD4 count less than 99, while 4(20%) had it between 100-199 while 6(30%) had it >200.

Considering the low CD4 count and renal and cardiac involvement, role of opportunistic infections in pathogenesis of these can be explained .

Thus it draws an inference that cardiac manifestations were seen at quite a low CD4 count which was <99 in 75% of patients as compared to renal group where only 60% had it below 99.

**11) Cardiac manifestations and their frequency**

**TABLE-12** describes, among cardiac manifestations dilated Cardiomyopathy being most common was seen in 9(45%) of patient followed by pericardial effusion 8(40%). Ischemic heart disease was seen in 2(10%) and primary pulmonary HT in 1(5%) of patient. Dilated Cardiomyopathy was the most common manifestation in our study thus comparative with the other studies like hakim<sup>28</sup> et al where Cardiomyopathy was seen in 31% patients, and corallo<sup>21,27</sup> et al of total patients 41% had dilated LV and reduced EF.

## **12) (A) Renal manifestations and their frequency**

**TABLE-13** describes ,of total renal patients 7 out of 22 (31.8%) fulfilled the criteria for HIV associated nephropathy, while 4 (18.1%) had obstructive uropathy and rest of 11 (50%) of patients either had CRF(not fulfilling the criteria of HIVAN) due to other causes or were in acute renal failure and one had pyelonephritis.

This percentage was comparable to the study done in Nigerian population by Chioma Pedro Emem et al (38%) of the total , however in this study male to female ratio was 1:1 , which was quite high as compared to ours due to the reasons as explained above.

In the study conducted by Steel-Duncan J<sup>48</sup> et al on Jamaican children Six patients (3%) fulfilled the criteria for HIVAN. As compared to our study large HIVAN was less frequent in this study which could be explained due to fact that it was a pediatric study done in children less than 14 yrs.

## **(B) Renal size on USG findings:**

**TABLE-14** USG KUB was done of all the patients who had urinary albumin and reduced GFR or elevated creatinine levels and it was found that majority of the patients 11(50%) had enlarged kidneys (including HIVAN, hydronephrosis and other causes) , while 9(40.9%) had normal kidneys size and only 2(9%) had shrunken kidney. This finding was most significant of all, proving that among the differentials of enlarged kidneys HIV nephropathy is the one which cant be neglected.



**13) Cardiovascular or renal manifestations as a first presentation** was seen only in one patient each of the two. Amongst the one with renal manifestation, a female had presented of anasarca and oral candidacies and among the one with cardiac, it was a young male presented of supraventricular tachycardia and was later found to have pulmonary hypertension.

**14) Among patients with freshly detected and those previously diagnosed with these manifestations:**

In TABLE-15 ,the one who were previously diagnosed case ,the average CD4 count was 143, with average Hb was 8.24 of while those freshly detected had CD4 count of 107 and average Hb of 8.28.

Average CD4 count in freshly detected cardiac patients was 46 , while that of renal was 142. However average CD4 count in previously diagnosed cardiac was 127, and in that of renal was 165. Average Hb was in old diagnose 8.24gm% with TC 4282 and s. creat - 4.12 while in newly diagnosed mean Hb was 8.28gm% , TC- 9837 and s.creat 3.04gm%.

These figures suggest that in patients with cardiac manifestations there was huge difference between fresh and diagnosed cases in CD4 count and also cardiac manifestations were seen at a CD4 count lower than renal manifestations which makes the point of role of many opportunistic infections in its causation again possible. In between fresh and previously diagnosed mean Hb was found to be lower in old patients suggesting chronicity and zidovudine induced anemia an important etiological factor for the same.

**15) Among studies with CARDIAC manifestations :**

**TABLE-16** describes , in the study conducted by himelman<sup>30</sup> et al ,of total 70 patients( mean age group 37 yrs) 16 had cardiovascular findings in which major findings included dilated cardiomyopathy in eight patients (11%), pericardial effusions in seven patients (10%) (one with impending tamponade), and mediastinal mass in one patient (1%).

In the study by corallo<sup>21,27</sup> et al of total 102 patients with cardiac manifestations in 42 (41%) there was a globular and poorly contracting LV which was dilated. 39 (38%) patients had pericardial effusion. In 4 patients , valvular endocarditic vegetation was shown, all of them were drug addicts , in 3 (2.9%) patients a cardiac mass was found which proved to be a localization of Kaposi's sarcoma in 2. 25 (24.5%) patients died; necropsy showed cardiac dilation, and thin LV walls in 18.

In the study done by hakim<sup>28</sup> et al Eighty (51%) men and 77 women were studied (mean (SD) age 34.4 (8.5). CVS abnormalities were found in 79 (50%) patients: most common finding was dilated cardiomyopathy and left ventricular dysfunction seen in 47(31%), 9/151 isolated right ventricular dilatation, and 30/157 (19%) pericardial disease (28 with effusions, three having tamponade). There were two cases of constrictive pericarditis and one of ascending aortic aneurysm.

In India among studies done by aggarwal<sup>31</sup> et al most common manifestations (on 2-Decho) were reduction in fractional shortening (18 patients, 34.6%), followed by left ventricular diastolic dysfunction (10 patients, 19.2 %), global hypokinesia (8 patients, 15.4%) and pericardial effusion (6 patients, 11.5%).

**16) Among studies with RENAL manifestations:**

In TABLE-17, In the major study conducted by Chioma Pedro Emem<sup>47</sup> et al on nigerian population out of 400 patients studied 152(38%) fulfilled the criteria for HIV associated nephropathy, however histology revealed focal segmental glomerulosclerosis with collapse in this study.

In the study conducted by Steel-Duncan J<sup>48</sup> et al on Jamaican children Six patients (3%) fulfilled the criteria for HIVAN, five of whom were male. Median age a diagnosis was five years; all presented with advanced HIV disease, nephrotic syndrome or nephrotic range proteinuria and three with chronic renal failure. As compared to our study large HIVAN was less frequent in this study which could be explained due to fact that it was a pediatric study done in children less than 14 yrs.

In another study conducted by Fernando<sup>49</sup> et al 24% of the patients were found to have CRF secondary to HIVAN.