To Study The Renal And Electrolyte Disturbances in Hiv Infected Patients.

Narayanan Ramesh[1], Victor Theophilus Premkumar [2]
[1]Senior Resident,Department of General Medicine, Sivagangai Medical College
[2]Professor of Medicine,Department of General Medicine , Madurai Medical College.
*Corresponding author: *Victor Theophilus Premkumar*

Abstract

Context: *HIV/AIDS patients may have renal involvement also, however, Indian data are sparse. The present study was done to find the prevalance of renal diseases in HIV/AIDS patients attending ART centre, Govt Rajaji hospital Madurai.*

Aim Of The Study: *To find out the prevalence of Renal and electrolyte disturbances in Patients with HIV irrespective of ART. To explore the mechanism for renal involvement through literature*

Settings And Design

Cross sectional study

Materials And Methods

Period of study – February 2016 to July 2016

This study was conducted in 200 HIV patients selected randomly irrespective of their ART status who attending ART clinic, Government Rajaji Hospital, Madurai. The study population were divided into 2 groups according to ART status. Group A ART naive patients and Group B HIV patients on ART.

Statistical Analysis

Mean,standard deviation,correlation coefficient

Results : *It is found that there is significant relationship between ART Naive Patients and increased urea,creatinine,proteinuria,hyponatremia,hypokalemia,increased USG renal cortical echoes.*

Conclusions : *In conclusion, it is found that renal and electrolyte disturbances are common in ART Naive patients than taking ART.*

Keywords: *ART –Anti retroviral therapy ,HIV - human immunodeficiency virus*

I. Introduction

Human immune deficiency virus infection was first identified in the year 1986 at Madras. Subsequently cases of HIV infection and AIDS identified all over India.HIV virus when infects a person over time causes AIDS(Acquired Immuno Deficiency Syndrome) .AIDS is a condition which causes progressive failure of the body's immune system allows life-threatening opportunistic infections and certain cancers to thrive. There are numerous clinical manifestations of AIDS. In India there are many studies dealing with various aspects of AIDS cases. Eventhough few studies available on various organ involvement in HIV infection and AIDS, they do not describe renal involvement in AIDS cases. So I hereby made an attempt to study renal and electrolyte disturbances in HIV affected individuals INDIA is world's third largest population suffering from HIV/AIDS. In our country ,as per 2015,there are 2.1 million people living with HIV. Adult (15–49 years) HIV prevalence is estimated as 0.3% .There are 68,000 people died of AIDS related illnesses in India in 2015.There occurs about 86,000 new HIV infections by the year 2015. Overall India's HIV epidemic is falling down.HIV prevalence in India varies geographically. The 5 states with highest prevalence are Nagaland, Mizoram, Manipur, Andhra Pradesh and Karnataka.

II. Materials And Methods

Study Population: : This study was conducted among 200 HIV positive patients coming to ART centre, Govt.Rajaji Hospital, Madurai during the period of February 2016 to July 2016. The study group will be divided into two groups: Group A ART naive patients and Group B HIV patients on ART

Inclusion Criteria: All patients aged greater than 18 attending ART OPD, diagnosed with HIV infection irrespective of Anti Retroviral Therapy

Exclusion Criteria:

Patient with Diabetes mellitus

Endocrine disorder

Known Chronic kidney disease
Obstructive uropathy
Pregnancy

Ethical Committee Approval: Obtained.
Study Protocol: A previously designed proforma will be used to collect the demographic and clinical details of the patients. Two hundred patients will be selected randomly. All the patients will undergo detailed clinical evaluation, appropriate investigations. History will be taken on details of unprotected sexual intercourse , blood transfusion, IV drug abuse, repeated respiratory infections, fever , recurrent diarrhoea and unexplained weight loss. Presence of lymphadenopathy, oral ulcers, splenomegaly and peripheral neuropathy will be noted. Blood urea, serum creatinine, blood glucose, Serum electrolytes , CD4 count, urine routine and 24 hour urine protein will be estimated..The study group will be divided into two groups: Group A ART naive patients and Group B HIV patients on ART.
Laboratory Investigations: "CD4+ count, Blood sugar, Blood Urea, Serum Creatinine, Serum sodium, Serum potassium, serum chloride, urine routine and 24 hour urine protein".

III.   Statistical Analysis

Mean and standard deviation for continuous variables and proportions for categorical variables are reported . Data analysis was done with the help of computer by using SPSS 16 software and Sigma Stat 3.5 version (2012). Using this software mean, standard deviation and „p" value were calculated through One way ANOVA, Chi square test and P value of < 0.05 was taken as
significant.

	CORRELATION coefficient	
CD4 COUNT VS UREA	0.04	Very Low
CD4 COUNT VS CREATININE	-0.01	Neg
CD4 COUNT VS Na+	0.128	Low
CD4 COUNT VS k+	0.071	Very Low

IV.   Results

"About 60% of study population were in the age group of 21-40 years and 36% of study populalation were in the age group of 41-60 years' : Most of study population were in the age group of 21 to 60years. Males are slightly higher than in the study population Around 45% patients have CD4 count between 200-500 and 32% patients have CD4 count 501-1000. 38% were on ART , 62% were ART naive. Mean urea level in the study population was found to be 30.140 ; with a standard deviation of 15.372 Elevated urea   levels were found in 16.5% of study population. Among them elevated urea more in ART NAÏVE patients than patients taking ART. .p value of <0.038 statistically significant; indicates 'renal abnormalities are higher in ART NAÏVE patients than patients on ART'. Around 33 (16.5) patients were found to be having elevated serum creatinine >1.3 . Mean serum creatinine in the study population is 1.109 with a standard deviation of 0.618. Around 72 (36%) patients were found to be having hyponatremia . Mean serum sodium in the study population is 133.7 with a standard deviation of 7.199 Serum sodium level found to be   decreased in more ART naïve patients than those on ART, p value was< 0.027, statistically significant ,indicate Na+ level was significantly lower in ART NAÏVE patients compared to patients on ART. Around 41 (20.5%) patients were found to be having hypokalemia . Mean serum potassium in the study population is 3.892 with a standard deviation of 0.894 Serum Potassium level decreased in 41 patients(20.5%) of study population, among them 13 patients (31.7%) on ART and 28 patients(68.3%) were ART NAÏVE. Serum Potassium level incresed in 19 patients(9.5%) of study population, among them 13 patients(68.4%)on ART and 6 patients(31.6%) were ART NAÏVE. Serum Potassium level found to be increased in more ART patients than those on ART NAÏVE. Proteinuria present in 33 patients (16.5%) of study population, among them 9 patients (27%) on ART and 24 patients (73%) were ART NAÏVE. Significant proteinuria was higher in   ART NAÏVE patiens and lower in patient taking ART. USG abdomen shows increased cortical echoes in   30 patients (15%) of study population, among them 7 patients (23%) on ART and 23 patients (77%) were ART NAÏVE. Renal cortical echoes were higher in

ART NAÏVE patiens and low occurence in patient taking ART.   In this study, there is very low correlation coefficient between CD4 counts and urea. There is negative correlation coefficient between CD4 counts and creatinine. The correlation coefficient is low between CD4 count and Na^+, K^+ levels.

USG- ↑ renal cortical echoes	No Of Patients
+	30
NIL	170
Total	200

CD4 Correlation coefficient
USG RENAL CORTICAL ECHOES

V.   Discussion

Renal and electrolyte abnormalities are more common in HIV infection .This study was conducted in 200 HIV patients selected randomly irrespective of their ART status who attending ART clinic, Government Rajaji Hospital, Madurai. The study population were divided into 2 groups according to ART status. Group A ART naive patients and Group B HIV patients on ART. .About 60% of study population were in the age group of 21-40 years and 36% of study population were in the age group of 41-60 years. Around 62% of study population were ART NAIVE and 38% were on ART. Gender distribution is of around 65% male and 35% female. Blood urea ,serum creatinine, Urine protein ,Serum sodium. Serum potassium and USG abdomen were performed in study populations.

Blood urea level was raised in 33 patients (16.5%) of study population, among them 9 patients (27%)on ART and 24 patients (73%) were ART NAÏVE. Blood urea level raised in ART naïve patients, p value was 0.038, statistically significant , indicate urea level was higher in ART NAÏVE patients and lower in patient taking ART. Serum creatinine level was raised in 33 patients (16.5%) of study population, among them 9 patients (27%) on ART and 24 patients (73%) were ART NAÏVE. Serum creatinine level raised in ART naïve patients, p value was 0.047, statistically significant, indicate cretinine level was higher in ART NAÏVE patients and lower in patient taking ART. Proteinuria present in 33 patients (16.5%) of study population, among them 9 patients (27%) on ART and 24 patients (73%) were ART NAÏVE. Significant proteinuria was higher in ART NAÏVE patiens and lower in patient taking ART. USG abdomen shows increased cortical echoes in 30 patients (15%) of study population, among them 7 patients (23%) on ART and 23 patients (77%) were ART NAÏVE. For all the patients, cortico medullary differentiation was maintained. Renal cortical echoes were higher in ART NAÏVE patiens and low occurence in patient taking ART. Review literature shows that Renal involvement found to be common in HIV infected patients.A low occurrence of renal involvement found in patients taking ART'.HIV nephropathy in US population shows heavy proteinuria and they found to develop progressive renal disease. So HIV patients are to be monitored for proteinuria. It helps to know about 1)Triggering factor 2)Progression of renal involvement 3)To minimize renal complication. HIV infected patients with oppurtinstic infectios were more prone for renal and electrolyte disturbances.

Review literature shows renal complications affects particular group of people that there will be a host response or genetic component linked with the disease incidence Over all study shows there is increased renal disturbances in ART NAÏVE patients than patients on ART suggest some renoprotective effect of ART and indicates decreased incidence of oppurtinistic infections. Serum sodium level decresed in 72 patients(36%) of study population, among them 27 patients(37.5%)on ART and 45 patients(62.5%) were ART NAÏVE. Serum sodium level found to be decreased in more ART naïve patients than those on ART, p value was< 0.027, statistically significant ,indicate Na+ level was significantly lower in ART NAÏVE patients compared to patients on ART.

Serum Potassium level decresed in 41 patients(20.5%) of study population, among them 13 patients(31.7%)on ART and 28 patients(68.3%) were ART NAÏVE. Serum Potassium level found to be decreased in more ART naïve patients than those on ART, p value was< 0.015, statisticallysignificant ,indicate K+ level was significantly lower in ART NAÏVE patients compared to patients on ART Serum Potassium level increased in 19 patients(9.5%) of study population, among them 13 patients(68.4%) on ART and 6 patients (31.6%) were ART NAÏVE. Serum Potassium level found to be increased in more ART patients than those on ART NAIVE, Probably due to drug intake such as Co-

Trimoxazole, etc,.

Hyponatremia, hypokalemia and hyperkalemia are common electrolyte disturbances in HIV. I described here higher incidence of electrolyte disturbances in ART naive patients than patients taking ART.

Numerous factors contributing this. Among 200 patients 72 patients had hyponatremia.The percentage of hyponatremia is 36%.

VI.   Conclusion

In conclusion, it is found that renal and electrolyte disturbances are common in ART Naive patients than taking ART.

VII.   Acknowledgements

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