

Original Research Article

To study the Renal changes and decline in eGFR with comparison to the different HAART regimens after the HAART initiation by using Cockcroft – Gault formula.

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Abstract:

Background & Method: The aim of the study is to study the Renal changes and decline in eGFR with comparison to the different HAART regimens after the HAART initiation by using Cockcroft – Gault formula. The 100 newly diagnosed HIV positive patients were included in the study. Detailed history – including duration of disease, any past history of antiretroviral drug and other medications, treatment regimen started, WHO staging of the HIV disease were obtained .

Result: In our study results shows that, before starting ART most patients, 54% were in eGFR between 60-90 category and 25% were in >90 category and at the end of study after HAART initiation, 79% of patients were in eGFR<90 ml/min. of which, 34% in <60 (moderate to severe) and 45% in 60-90 eGFR(mild reduction). Approximately 21% of patients with normal baseline eGFR falls into severe decline in eGFR after ART introduction. The overall average mean eGFR at the end of study in this sample is 68.29±27.54. Also renomegaly / contracted kidney was found in 15 patients (15%) and 85 patients (85%) had normal sized kidneys.

Conclusion: In our study 49% had albuminuria. Among them, 24 % have significant albuminuria (2+, 3+) and all patients had significant decline in eGFR of < 60 .There is a significant P value between Urine albumin and eGFR. This highlights the critical and underappreciated need to monitor renal function in HIV positive patients attending ART clinic at GRMC, particularly in this era where Tenofovir is being used in first line ART regimen in majority of patients as recommended by WHO.

Keywords: Renal, Adult, HIV, HAART, eGFR.

Study Designed: Cross sectional study

1. Introduction

Glomerular filtration rate (GFR) measures the rate at which substances are filtered from the blood into the urine[1]. The development of formula-based calculation of eGFR has offered a very practical and easy approach for converting serum creatinine value into GFR result taking into consideration patient's age, sex, ethnicity and weight depending on equation type.

Severity of kidney disease directly correlates with decrease in GFR which can be calculated in the clinical setting[2].

Acquired immunodeficiency syndrome (AIDS) of humans is caused by two lentiviruses[3], human immunodeficiency viruses types 1 and 2 (HIV-1 and HIV-2). Here, we describe the origins and evolution of these viruses, and the circumstances that led to the AIDS pandemic. Both HIVs are the result of multiple cross-species transmissions of simian immunodeficiency viruses (SIVs) naturally infecting African primates. Most of these transfers resulted in viruses that spread in humans to only a limited extent[4]. However, one transmission event, involving SIVcpz from chimpanzees in southeastern Cameroon, gave rise to HIV-1 group M—the principal cause of the AIDS pandemic[5].

2. Material & Method

100 patients who are attending ART clinic and admitting in Medical units at Gajraraja Medical College Hospital were randomly selected as per the inclusion and exclusion criteria. Out of these, 56 were men and 44 were women. The mean age of subjects was 40.70 years with a range of 18-80 years. Written informed consent was obtained from each HIV positive patients enrolled in the study.

The 100 newly diagnosed HIV positive patients were included in the study. Detailed history – including duration of disease, any past history of antiretroviral drug and other medications , treatment regimen started , WHO staging of the HIV disease were obtained .

Patients were examined in detailed for assessing any symptoms and signs of renal failure. Blood samples were taken for screening baseline renal function for urea, creatinine. Baseline eGFR was calculated using Cockcroft – Gault equation. Patients were followed up over a period of 12 months and any opportunistic infections developed among patients during study period was noted. At the end of 12 months, patients were assessed for Urea, Creatinine by drawing blood samples and eGFR was calculated using CG formula. Urine routine and USG KUB was done.

INCLUSION CRITERIA:

1. All newly diagnosed adult HIV positive patients who are attending ART clinic and will be started on HAART at Jayarogya group of Hospitals Gwalior.

EXCLUSION CRITERIA:

1. Patients with Chronic renal failure
2. Patients with diagnosed systemic causes of renal diseases (eg., SLE, Systemic Sclerosis, Rheumatoid arthritis, and other rheumatological & connective tissue disorders)
3. Patients who are known Diabetic or Hypertensive or any other comorbid illness.
4. Pregnant women and children age less than 15 years
5. Patients with poor adherence (> 80 %)
6. Patients receiving other nephrotoxic drugs / NSAIDS.

3. Results

Table 1: Distribution of cases according to Gender

Gender	No. of Cases	Percentage
Male	56	56.0
Female	44	44.0
Total	100	100.0

Amongst 100 cases of HIV infected patients, there were 56(56%) males and 44(44%) were females. Majority are males with 56% of study population.

Table 2: Distribution of cases according to estimated glomerular filtration rate before and after ART

Category	eGFR (ml/min/1.73m ²)		Difference (B-E)
	Baseline	End of 12 th months	
60-90 (Mild)	54	45	9
< 60 (Moderate to Severe)	21	34	13
> 90 (Normal)	25	21	4
Total	100	100	26

Above table shows that, before starting ART most patients, 54% were in 60-90 category and 25% were in >90 category and at the end of study after HAART initiation, 79% of patients were in eGFR<90 ml/min. of which, 34% in <60 (moderate to severe) and 45% in 60-90 eGFR(mild reduction). Approximately 21% of patients with normal baseline eGFR falls into severe decline in eGFR after ART introduction. The overall average mean eGFR at the end of study in this sample is 68.29±27.54.

Table 3: Distribution of cases according to Urine Albumin

Microalbuminuria	No. of Cases	Percentage
Negative	51	51.0
Trace	23	23.0
1+	14	14.0
2+	8	8.0
3+	4	4.0
Total	100	100.0

Above tables shows that, albuminuria was noted in 49 patients(49%). Out of 49,23 had Trace, 14 had 1+,8 had 2+ and 4 had 3+ albuminuria.

Table 4: Distribution of USG –Kub

USG –Kub	No. of Cases	Percentage
Normal	85	85.0
Renomegaly/ Contracted	15	15.0
Total	100	100.0

Above table shows that, renomegaly / contraceted kidney was found in 15 patients (15%) and 85 patients (85%) had normal sized kidneys.

Table 5: Distribution of opportunistic infections

Opportunistic infections	No. of Cases	Percentage
CMV Retinitis	1	1.0
GE	6	6.0
HIVMYELO	1	1.0
HZ	7	7.0
OC	2	2.0
OC+HIV Myelopathy	1	1.0
PCP	1	1.0
PPE	3	3.0
PT	12	12.0
PT+OC	1	1.0
PT+PCP	4	4.0
SEBORRHEA	2	2.0
TB LN	2	2.0
TB SPINE	1	1.0
TBM	2	2.0
TE	3	3.0
Toxoplasmosis	2	2.0
None	49	49.0
Total	100	100.0

4. Discussion

In the present study albuminuria was noted in 49%. Among these 24 % had insignificant albuminuria, 2+ in 16% and 3+ in 8 %. The incidence of albuminuria in the present study was comparable to that reported with various other studies[6].

In the present study 15 % of patients have abnormal sized kidney, and 85% have normal size kidneys[7]. According to the study by De Fiori et al., Renomegaly was present in 20% of patients. The present study, in contrary to the above mentioned study has not proven the cases of HIVAN (though signs and symtoms were present), because renal biopsy was not done[8].

In the present study, majority of patients 71% were in Tenofovir based Regimen TLN, Rest of the 29% were in Zidovudine based regimen ZLN Msango et al., Tanzania study also shows the use of Tenofovir as the first line regimen in HIV outpatients group as recommended by WHO, though it has nephrotoxic potential[9&10]

5. Conclusion

In our study 49% had albuminuria. Among them, 24 % have significant albuminuria (2+, 3+) and all patients had significant decline in eGFR of < 60 .There is a significant P value between Urine albumin and eGFR. This highlights the critical and underappreciated need to monitor renal function in HIV positive patients attending ART clinic at GRMC, particularly in this era where Tenofovir is being used in first line ART regimen in majority of patients as recommended by WHO.

6. References

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