

Prevalence of Sub-Clinical Hypothyroidism in HIV Patient of India

Savita Aharwal¹, Pooja Agrawal²

Author's Affiliation:

^{1,2}Assistant Professor, Department of Medicine, Late Shri Lakhi Ram Agrawal Memorial Government Medical College, Bendorchuwa, Raigarh, Chhattisgarh 496001, India.

Corresponding Author:

Savita Aharwal, Assistant Professor, Department of Medicine, Late Shri Lakhi Ram Agrawal Memorial Government Medical College, Bendorchuwa, Raigarh, Chhattisgarh 496001, India.

E-mail: gaukaran123@gmail.com

Received on 12.06.2018,
Accepted on 14.07.2018

Abstract

Background: AIDS is caused by HIV, a non-transforming human retrovirus belonging to the lentivirus family; two genetically different but related forms of HIV, called HIV-1 and HIV-2 have been isolated from patients with AIDS. **Objective:** The main objective of the current study is to investigate that the prevalence of subclinical hypothyroidism in HIV positive patients with treatment and without treatment. **Method:** Those HIV positive patients which were admitted in Medicine ward or attending Medicine / ART OPD of NSCB Medical College, Jabalpur were selected for the study. The patient presented with signs & symptoms of hypothyroidism (like tiredness/weakness, dry skin, feeling cold, hair loss, constipation, dyspnoea, impaired hearing, hoarse voice, weight gain with poor appetite, difficulty Concentrating & poor memory etc.) were excluded from the study. Further, patients with diagnosed case of Thyroid disease, renal disease, Malignancy & patient receiving drugs Affecting Thyroid function were screened & were also excluded from the study. **Result:** Finding of the present study shows that Thyroid Dysfunction in 200 HIV positive patients. Among those 26 patients (13%) had Thyroid Dysfunction. Out of these 26 patients, 15 were male & 11 were female. Thyroid Dysfunction was slightly more common in female patient (14.67%) Than male patients (12%). **Conclusion:** In this present study, out of 200 HIV positive cases, 125 (62.5%) were male & 75 (37.5%) were female, age ranging from 14 to 70 years. Maximum HIV positive patients were in the age group of 26-45 years. Out of 200 HIV positive patients, 26 patients (13%) had Thyroid Dysfunction. Among these 26 patients, 23 patients (11.5%) had subclinical hypothyroidism. 88.5% cases of thyroid dysfunction were of subclinical Hypothyroidism. Prevalence of subclinical hypothyroidism was found to be slightly more among females (12%) than males (11.2%)

Keyword: Hypothyroidism; HIV; Prevalence.

Introduction

AIDS is caused by HIV, a non-transforming human retro-virus belonging to the lentivirus family; two genetically different but related forms of HIV, called HIV-1 and HIV-2 have been isolated from patients with AIDS. HIV is most common type of associated with AIDS in the United States, Europe, and central Africa (Cotran, et al., 2004). African countries which are not in western Africa, Angola & Mozambique also have high HIV-2 sero prevalence and additional spread of HIV-2 has been documented in Portugal, France and India (Maurer, 2007).

HIV infection is associated with clinical and subclinical dysfunction of adrenal, gonadal, and thyroid hormones. Infections, neoplastic infiltration and systemic effects of HIV are the causative factors for endocrine abnormalities (Beltran, et al., 2003). Prognosis improved significantly with HAART in individuals with HIV infection; however, prolonged antiretroviral treatment have been reported with significant adverse effects. These includes lipodystrophy, Grave disease and subclinical hypothyroidism. Subclinical hypothyroidism may be associated with mild clinical abnormalities and is a precursor to overt hypothyroidism (Touzot

et al., 2006). Despite a significant impact of thyroid abnormality in HIV patient there is a significant lacuna of study. Our study is an attempt to get information on this area.

Objective

The main objective of the current study is to investigate that the prevalence of subclinical hypothyroidism in HIV positive patients with treatment and without treatment.

Methods

Those HIV positive patients which were admitted in Medicine ward or attending Medicine /ART OPD of NSCB Medical College, Jabalpur were selected for the study. The patient presented with signs & symptoms of hypothyroidism (like tiredness/weakness, dry skin, feeling cold, hair loss, constipation, dyspnoea, impaired hearing, hoarse voice, weight gain with poor appetite, difficulty Concentrating & poor memory etc.) were excluded from the study. Further, patients with diagnosed case of Thyroid disease, renal disease, Malignancy & patient receiving drugs Affecting Thyroid function were screened & were also excluded from the study.

The Enrolled patients were evaluated by the following Investigations:-

- i. Thyroid profile
 - a. TSH
 - b. T3
 - c. T4
- ii. CD4 cell count
- iii. HIV Test

Procedure of tests

HIV test done by:

A. NEVA HIV (a rapid test for HIV detection) based on Re-combinant proteins. The presence or absence of antibodies to HIV in a sample is determined by observing both the spots on the Slide carefully.

B. HIV TR-IDOT TEST-The HIV tri-dot test is a visual, rapid, Sensitive and accurate immune assay for the differential detection of HIV-1 & HIV-2 antibody in human serum.

C. Dot immunoassay for the detection of antibody

to HIV1 and /or HIV2 in whole blood, serum or plasma. Currently available test methods use the viral proteins or some of their constituent peptides as antigen.

CD4 Cell Count

BD Tri Count Tubes

This tube is used for determining absolute count of leucocytes in blood. These tubes are designed for use within vitro diagnostic products such as BD Tri TEST reagents & equipped flow cytometer. During analysis, the absolute number of positive cells in the sample can be determined by comparing Cellular events to bead events. Whole blood was stained with Tri TEST CD3/CD4/CD45 using Tri COUNT Tube sand analyzed using Cell Quest software.

Thyroidfunction Test:

Total Tri - iodothyronine (tT3)

Accu-Bind ELISA Micro wells, is used for quantitative Determination of total Triiodothyronine concentration in Human serum or plasma by a Micro plate Enzyme Immuno assay.

Procedure of Specimen collection & preparation-

The specimen shall be blood, serum or plasma in type which are collected under usual precautions. For accurate comparison to established normal values, fasting morning serum sample should be obtained. The blood should be collected in plain red top venipuncture tube without additive or anti-coagulants. Allow the blood to clot for serum sample. Centrifuge the specimen to separate the serum or plasma from the cells. Samples may be Refrigerated at 2-8°C for a maximum period of 5days. If the specimen (s) cannot be assessed with in this time, the samples may be stored at temperature of -20°C for up to 30days and repetitive freezing & thawing are avoided. When assayed in duplicate, 0.100ml of the specimen was required.

Statistical analyses

Purpose of the present study descriptive analyses technique was used in data treatment.

Result

Findings of the observation were shows the below tables-

The above Table 1 shows proportion of male & female subjects in 200 HIV positive patients. Out of 200 patients 125 (62.5%) were Male & 75 (37.5%) were female (Table 1).

The above table no. 2 shows Thyroid Dysfunction in 200 patients of HIV. Among those 26 patients (13%) had Thyroid Dysfunction. Out of these 26 patients, 15 were male & 11 were female. Thyroid Dysfunction was slightly more common in female patient (14.67%) Than male patients (12%) (Table 2).

Table no. 3 show among 26 patients of thyroid dysfunction, 23 patients were having sub clinical hypothyroidism & rest 3 had subclinical Hyperthyroidism. Prevalence of subclinical hypothyroidism (11.5%) was more in comparison to that of subclinical hyperthyroidism (1.5%) (Table 3).

The above table no. 4 shows sex-wise distribution of 23 HIV Positive patients with Subclinical Hypothyroidism. Out of 23 Patients 14 were male (60.87%) and 9 were female (39.13%). Prevalence of subclinical hypothyroidism was found to be slightly more among females (9 out of 75 i.e. 12%) than males (14 out of 125 i.e. 11.2%) (Table 4).

The above Table 5 shows that Absolute CD4 count in 137 (68.5%) patients out of 200 HIV positive patients with in the normal range of 200-500. Mean value of absolute CD4 count was found to be 355.88±181.0389. Mean value of absolute CD4 count was found to be slightly greater among males than female HIV positive patients. 20.8% of male HIV positive patients had absolute CD4 countless than 200 (Table 5).

Table 1: shows the sex wise distribution of HIV positive patients

Sex	HIV positive cases	
	No. of cases	%
Male	125	62.5
Female	75	37.5
Total	200	100

Table 2: shows the sex-wise distribution of HIV positive patients with thyroid dysfunction

HIV positive cases	Male		Female		Total	
	No. of cases	%	No. of cases	%	No. of cases	%
With thyroid dysfunction	15	12	11	14.67	26	13
Without thyroid dysfunction	110	88	64	85.33	174	87
Total	125	100	75	100	200	100

Table 3: shows distribution of thyroid dysfunction sub type in HIV positive patients

HIV positive cases	Total (N=200)	
	No. of cases (n)	%
With subclinical hypothyroidism	23	11.5
With subclinical hyperthyroidism	3	1.5

Table 4: shows the sex-wise distribution of HIV positive patients with sub clinical hypothyroidism

Sex	HIV positive cases with subclinical hypothyroidism (n=23)		Total HIV positive cases (n= 200)	
	No.	%	No.	%
Male	14	60.87	125	62.5
Female	9	39.13	75	37.5
Total	23	100	200	100

Table 5: shows the distribution of HIV positive patients' w.r.t. absolute CD4 count

Absolute CD4 count	Male		Female		Total	
	No.	%	No.	%	No.	%
<200	26	20.80	9	12.0	35	17.5
200-500	80	64.0	57	76.0	137	68.5
>500	19	15.20	9	12.0	28	14.0
Mean	355.88		351.57		355.88	
Sd	(181.03)		(181.19)		(181.88)	

Table 6: shows the distribution of HIV patients with and without subclinical hypothyroidism w.r.t. absolute CD4 count

Absolute CD4 count	Subclinical hypothyroidism				Total	
	Present		Absent			
	No.	%	No.	%		
<200	11	47.83	24	13.56	35	17.5
200-500	12	52.17	125	70.62	137	68.5
>500	Nil	0	28	15.82	28	14
Total	23	100	177	100	200	100

The above Table 6 shows among 200 HIV+ patients majority (68.5%) are having absolute CD4 count between 200-500 ranges. While the raised marked difference in the percentage of patients having absolute CD4 count <200 in relation to Subclinical Hypothyroidism occurrence. 47.83% of subjects with subclinical hypothyroidism are having absolute CD4 count <200 in contrast to 13.56% of subjects without subclinical hypothyroidism (Table 6).

Discussion

Out of 200 patients 125 (62.5%) were male & 75 (37.5%) were female. Thus males were predominant in our study.

In 2000 Grappin et al. a total of 212 patients were included in the study. The sex ratio of men to women was 2:1. In 2003 Beltran et al. the case-control study included 343 Case patients where sex ratio of male to female was 2:1. In 2006 Ketsamathi et al. a cross-sectional study was conducted. A total of 200 HIV-infected out patients were included. 97 patients (48.5%) were male and 103 (51.5%) were female. In 2007 Quinn et al. where studied in 687 patients, 446 males and 241 female. In my study, HIV positive male patients were more as Compared to female which is similar to all these studies. The Higher number of male patients suffering from HIV could be attributed to their job and occupational habits, multiplicity of Sexual partners and high risk behaviors, professional blood Donation and higher number of reporting of cases to hospitals as Compared to female patients suffering from HIV. Male patients usually dominate in their family present to hospital more as compare to female. Female are neglected in society and due to social stigma they come to hospital in lesser number.

Among 200 HIV positive patients, 26 patients (13%) had Thyroid dysfunction. Out of these 26 patients 15 were male & 11 were female. Thyroid dysfunction was slightly more common in Female patient (14.67%) than male patients (12%).

In 2002 Calza et al. Eighty-four patients were evaluated for study, subclinical hypothyroidism occurred in 3 men and 3 women, aged 31 to 49 years.

Among 26 patients of thyroid dysfunction, 23 patients were having subclinical hypothyroidism & rest 3 had subclinical hyperthyroidism. Prevalence of subclinical hypothyroidism (11.5%) Was more in comparison to that of subclinical hyperthyroidism (1.5%).

In 2003 Carter, et al. The study between May & December 2001, included a cohort of 350 patients 16% of patients (n=56) had hypothyroidism, of whom 2.6% had overt hypothyroidism, 6.6% subclinical hypothyroidism, and 6.8% a low FT4 level. In 2003 Beltran et al a cohort of 350 patients with HIV was screened. Overt hypothyroidism was detected in 2.6 percent of patients. Subclinical hypothyroidism was detected in an additional 6.6 percent of patients. Low free T4 was found in another 6.8 percent. In 2006 Ketsamathi, et al; a cross-sectional study on 200 HIV-infected out patients was conducted. 27 patients (13.5%) had decreased thyroid function (subclinical hypothyroidism 12) whereas 5 patients had increased thyroid function (subclinical hyperthyroidism 1). In my study proportion of subclinical hypothyroidism (11.5%) was maximum in thyroid dysfunction cases of HIV positive patients which is similar to these studies.

The most common age group among subclinical hypothyroidism patients was between 26-45 years (78.26%). The statistical analysis showed that mean age of subclinical hypothyroidism with HIV positive patients was 32.4846±9.5633 were mean age of HIV + patients was 32.5225±9.5058.

In 2000 Grappin, et al., A total of 212 patients were included in the study. The mean age was 40.8 years (SD=9.54) In my study on 200 HIV positive patients, the prevalence of Subclinical hypothyroidism was maximum in subjects of age group of 26-45 years, which is similar to these studies. In 2006 Ketsamathi; et al A cross-sectional study on 200 HIV-infected out patients was conducted. Ninety-seven patients (48.5%) were men (mean age of 36.3±8.3years).

Conclusion

In this present study, out of 200 HIV positive cases, 125 (62.5%) were male & 75 (37.5%) were female, age ranging from 14 to 70 years. Maximum HIV positive patients were in the age group of 26-45 years. Out of 200 HIV positive patients, 26 patients (13%) had Thyroid Dysfunction. Among these 26 patients, 23 patients (11.5%) had subclinical hypothyroidism. 88.5% cases of thyroid dysfunction were of subclinical Hypothyroidism. Prevalence of subclinical hypothyroidism was found to be slightly more among females (12%) than males (11.2%).

References

1. Beltran S, Lescure FX, Desailoud R, Douadi Y, Smail A, El Esper I, Arlot S, Schmit JL, Thyroid and VIH (THYVI) Group. Increased prevalence of hypothyroidism among human immunodeficiency virus –infected patients: A need for screening. *Clinical Infectious Diseases*. 2003 Aug 15;37(4):579-83.
 2. Calza L, Manfredi R, Chiodo F. Inter science Conference on Antimicrobial Agents and Chemotherapy (42nd ed.). 2002.p.361-36. San Diego -128.
 3. Carter M, et al. *Clinical infectious Diseases* (15th edition). 2003.p.483-85.
 4. Cotran RS, Kumar V, Collins T. *Diseases of immunity*. In: Robbins. *Pathologic basis of disease* (7th ed.). Singapore: W B Saunders Company, 2004.p.188-259. A3.
 5. Grappin M, Piroth L, Verges B, Sgro C, Mack G, Buisson M, Duong M, Chavanet P, Portier H. Increased prevalence of subclinical hypothyroidism in HIV patients treated with highly active antiretroviral therapy. *Aids*. 2000 May 26;14(8):1070.
 6. Ketsamathi C, et al. *Current HIV Research*, Bentham Science Publishers. 2006.p.463-67.
 7. Maurer T. Skin manifestations inpatients with HIV infection. In: Goldman L, Ausiello D editors. *Cecil textbook of Medicine* (23rd ed.). Philadelphia: Saunders, 2007.p.2597-2601. A20.
 8. Quinn TC. Epidemiology of human immune deficiency virus Infection and acquired immune deficiency syndrome. In: Goldman L, Ausiello D, editors. *Cecil textbook of Medicine* (23rd ed.). Philadelphia: Saunders. 2007.p.2561-63.
 9. Touzot M, Le Beller C, Touzot F, Lillo-le Louet A, Piketty C. Dramatic interaction between levothyroxine and lopinavir/ritonavir in a HIV-infected patient. *Aids*. 2006 May 12;20(8):1210-2.
-

Red Flower Publication Pvt. Ltd.

CAPTURE YOUR MARKET

For advertising in this journal

Please contact:

International print and online display advertising sales

Advertisement Manager

Phone: 91-11-22756995, 22754205, 45796900, Cell: +91-9821671871

E-mail: sales@rfppl.co.in

Recruitment and Classified Advertising

Advertisement Manager

Phone: 91-11-22756995, 22754205, 45796900, Cell: +91-9821671871

E-mail: sales@rfppl.co.in