ORIGINAL RESEARCH PAPER

General Medicine

THYROID FUNCTION IN HIV PATIENTS ATTENDING TO A TERTIARY CARE HOSPITAL

KEY WORDS: Thyroid function, Hiv, CD4 count

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ABSTRACT

In this prospective study of 100 HIV infected patients at various stages of illness, thyroid function tests consisting of T3, T4, and serum thyroid-stimulating hormone (TSH) are studied. The results analyzed and the correlation of abnormalities in thyroid function tests with the CD4 count studied. All the cases included interrogated and examined. Out of the 100 patients studied, 60% were males, and 40% were females. The age group ranged from 20 years to above 50 years of age. The CD4 count ranged from less than 100 to more than 500. In this study, 80% of the population had T4 levels between 5-12.0, and 42% had TSH levels between 0.5 to 5, whereas 48% of the studied population had an increased TSH above 5. All patients with CD4 count less than 100 had an increased TSH of above 5, and 94% of the patients with CD4 between 100-200 had TSH above 5.

OBJECTIVES: To evaluate the thyroid function in patients infected with human immunodeficiency virus (HIV) and to correlate the results with the CD4 count

INTRODUCTION

Several cases of clinical and subclinical adrenal, gonadal, and thyroid dysfunction reported in association with HIV infection before the introduction of HAART [1]. Viral and opportunistic infections, neoplastic infiltration of the gland, and systemic effects of HIV infection implicated in these endocrine abnormalities, which include lipodystrophy[2] and, more recently, Grave's disease [3] and subclinical Hypothyroidism [4] consisting of elevated thyroid-stimulating hormone (TSH) with normal T4 values. The prevalence of overt thyroid disease, though, does not appear to be significantly increased in HIV infected patients; when compared with the general population, specific patterns of abnormal thyroid function test findings more frequently identified. Graves' disease, which is marked by low thyroid-stimulating hormone and elevated thyroxine levels, may occur during immune reconstitution. Among individuals infected with HIV, 1%–2% experience overt thyroid disease, and 35% may have subtle abnormalities in thyroid function test findings[5,6,7]. The HIV clinician, therefore, often must interpret abnormal thyroid function test results.

METHODOLOGY

STUDY PARTICULARS AND SOURCE DATA

A hundred subjects coming to KING GEORGE HOSPITAL VISAKHAPATNAM between September 2017 to October 2019 diagnosed to have HIV+ enrolled in the study

Inclusion Criteria

All subjects with HIV infection detected and above 18 years of age

Exclusion criteria

All known cases of thyroid disease, Use of drugs known to interfere with thyroid hormone metabolism, e.g., rifampicin, steroids, ketoconazole, antiepileptics, Pregnant women

RESULTS

Table 1: Age distribution of patients studied

Age in years	Number of patients	%
20-30	36	36.0
30-40	38	38.0
41-50	16	16.0
51 & above	10	10.0
Total	100	100.0

Mean ± SD: 36.50±10.25

Table 2: Gender distribution of patients studied

Gender	Number of patients	%
Male	60	60.0
Female	40	40.0
Total	100	100.0

Table 3: CD4 count distribution of patients studied

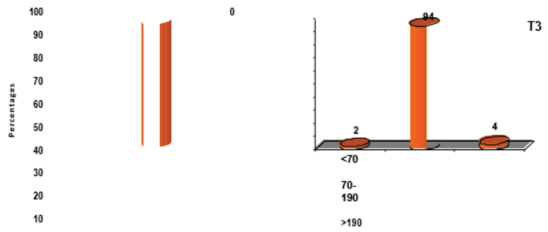
CD4 count	Number of patients	%
<100	16	16.0
100-200	36	36.0
200-500	28	28.0
>500	24	24.0
Total	100	100.0

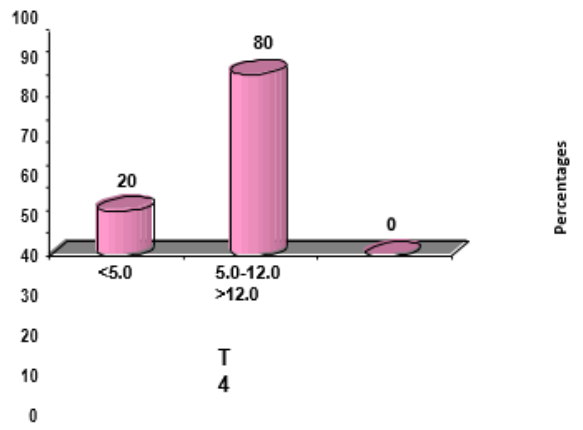
Mean ± SD: 311.46±223.94

Table 4 Thyroid parameters of patients studied

Thyroid parameters	Number of patients (n=100)	%
T3		
• <70	2	2.0
• 70-190	94	94.0
• >190	4	4.0
T4		
• <5.0	20	20.0
• 5.0-12.0	80	80.0
• >12.0	0	0.0
TSH		
• <0.5	0	0.0
• 0.5-5.0	42	42.0
• >5.0	58	58.0

Figure 1: Percentage distribution of the thyroid profile studied





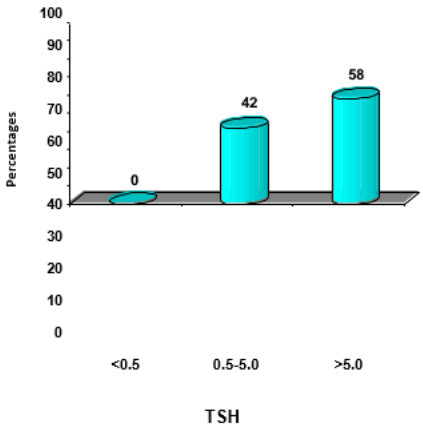


Table 5: Co-relation of T3, T4, and TSH with a CD4 count

Variables	CD4 count					
	<100 (n=14)	100-200 (n=34)	200-500 (n=32)	>500 (n=20)	Total (n=100)	P-value
T3	93.81±28.92	112.74±26.10	124.86±28.44	118.20±20.90	115.06±27.43	0.085+
T4	5.55±1.36	7.55±2.29	8.22±1.65	7.76±1.29	7.53±1.95	0.020*
TSH	15.63±4.51	10.66±3.82	4.83±2.53	3.14±0.86	7.98±5.31	<0.001**

Table 6:Various symptoms observed in %

Symptoms	%
Fever	28.67
Weight loss	4.28
Diarrhea	10
Routine follow up	21.42
Difficulty in swallowing	5.7
Loss of weight	2.85
Headache	4.28
Painful lesions over the back	2.85
Cough	5.7
Burning micturition	2.85
Abdominal Distention	5.7
White discharge PV	2.85
Weakness of limbs	2.85

Table 7: Co-relation of a pulse with TSH

Pulse (bpm)	TSH		
	<0.5 (n=0)	0.5-5.0 (n=42)	>5.0 (n=58)
<60	0	0	6(10.3%)
60-100	0	40(95.2%)	32(55.2%)
>100	0	2(4.8%)	22(37.9%)

DISCUSSION

We have studied the thyroid profile of 100 HIV infected individuals after considering the exclusion criteria. Out of the 100 individuals, 36% were between 20-30 years of age and 48% between 31-40 years males constituted 60%, and females were 40%, however, in a study done by Palaniswamy et al. had 50 individuals with 100% males[8].The thyroid profile studies in these patients revealed the majority of the T3 and T4 values were in the normal range 70-190 (94%) and T4 5.0-12.0 (80%) however a large portion of the TSH values were above normal range >5.0 (58%) (p=<0.001). In a study done by Marco Bongiviani et al[9] on 35 HIV positive and Sonia Beltran et al[8] on 697 individuals showed results similar to that of ours where most of them were having a high TSH value, but T3 and T4 were normal amongst these individuals. The Cd4 count in our study had a wide range of spectrum from less than 100 to more than 500. When the thyroid profile was co-related with CD4 count, it showed that people with higher CD4 count were having normal thyroid profile values than people with lower CD4 count. People with Cd4 count between 100- 200 were having a mean TSH value of 10.66+/- 3.8 and people with Cd4 less than <100 were having TSH values 15.6+/-4.5 (p= <.001)Marco Bongiviani study revealed an increased prevalence of clinical hypothyroidism in both HIV individuals on HAART and those who were not on HAART[9]. When CD4 was co-related in males and females, it showed that both males and females were affected equally with p=<.001. Jain G et al[10] also showed that males and females were equally affected with subclinical hypothyroidism in HIV.Judie B alimonty21 did a study also showed that both males and females had subclinical hypothyroidism in HIV. Our study showed that as the CD4 count decreased, the percentage of people with symptoms of diarrhea increased significantly (p=<0.001). A study was done by A K Brink [11] et al. also showed that 80% of the people with a CD4 count. <200 had either acute or chronic episodes of diarrhea. Our study showed that in 93.1% of the HIV infected individuals did not have bradycardia, 37.9% of the individuals with hypothyroidism had tachycardia. A lower BMI was noted in individuals with a lower CD4 count as compared to individuals with a higher Cd4 count. In a similar study done by Van Der Sande et al [12] showed that when a mean CD4 count of the population studied was taken mean CD4 of 100 had BMI less than 18, mean CD4 of 160 had BMI of 16-18and mean CD4 of 290 had BMI of 19-20 however healthy BMI was seen in mean CD4 above 330.

CONCLUSIONS

Thyroid dysfunction is common in HIV infection, and with the progression of the disease, there is a hypothyroid stage that occurs in patients with HIV infection.Males and females who have HIV show an equal incidence of thyroid dysfunction. All individuals with a CD4 count of less than 200 should be screened for hypothyroidism. Patients have increased episodes of diarrhea with decreasing cd4 count. Bradycardia may not be a relevant clinical sign in HIV individuals with hypothyroidism. A lower BMI noted in individuals with a lower CD4 count as compared to individuals with a higher CD4 count.

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