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SUBCLINICAL HYPOTHYROIDISM IN HIV 1 POSITIVE PATIENTS

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ABSTRACT: The prevalence of human immunodeficiency virus infection in India is estimated to be around 2.4 million.¹ HIV infection can lead to involvement of various organs and Systems including endocrine glands. Alteration in endocrine functions may be due to the possible relationship between the immune and endocrine systems, direct involvement of the glands by the virus itself, opportunistic infections or malignancies, highly active antiretroviral therapy and drugs used to treat opportunistic infections.^{2,3} Thyroid hormones play a fundamental role in metabolism regulation of the immune system, modulating humoral and cell mediated immunity.⁴ Many studies have evaluated the possible relationship of thyroid dysfunction in HIV. This study has been carried out in Medicine department of Rangaraya medical college GGH Kakinada, Sraddha Hospital, Visakhapatnam, Andhra medical college, KGH, Visakhapatnam, GEMS hospital Srikakulam with an aim to see the incidence of subclinical hypothyroidism in HIV I positive patients and its effect on diseases and possibility of an early diagnosis of hypothyroidism. Out of 102 patients 86(86.27%) are Euthyroid and 14(13.72%) are sub clinical hypothyroidism. Highest incidence is seen in stage 4. High incidence of thyroid dysfunction seen with low CD₄ count. 10 females and 4 males are found. Out of 10 females 8 are not under ART have subclinical Hypothyroidism. In view of above high incidence of Thyroid Dysfunction in HIV patients with low CD₄ counts has to be considered for screening.

KEYWORDS: CD₄ Count, Thyroid Profile, Western blot test, candidiasis.

INTRODUCTION: MATERIALS AND METHODS: Patients who were diagnosed to have HIV infection according to national AIDS control organization (NACO), (March 2007) guidelines, who fulfill inclusion and exclusion criteria. 102 cases of HIV infected patients meeting the inclusion criteria were samples by simple random sampling 57 are male and 45 are female HIV patients. Inclusion criteria is patients who are diagnosed to have HIV infection by ELISA test according to national AIDS control organization, Age >18 and <65 years and no sign or symptoms of hypothyroidism. Exclusion criteria is Age <12 years, hypo-proteinemia conditions and pregnancy. Data was collected by using pre-tested proforma, meeting the objectives of the study. Results were analyzed and tested by chi square test and variables like age gender etc., and serum TSH level were analyzed. Complete haemogram, RBS, blood urea, serum creatinine, test for HIV (NACO approved test), CD₄ count, thyroid functional tests (T4 total, T3 total and TSH), hepatitis B & C serology, chest X-ray, ECG investigations were done.

OBSERVATIONS: In the present study, 56 (55.88%) male patients and 45 (44.11%) female patients were studied in all 102 patients, evidence for thyroid dysfunction were observed. Age range of patients were 21-65 years. Patients have been grouped as one who is HIV positive on ART treatment 44(43.13%) and one who is HIV positive not on ART treatment 58(56.86%). Patients have been divided into three groups depending on CD₄ count. Category A HIV positive with CD₄ count <200/mm³, Category B HIV positive with CD₄ count 200-350/mm³, Category C HIV positive with CD₄

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count $>350/\text{mm}^3$. The present study has 34(33.33%) of category A patients 50(49.01%) of category B and 18(17.64%) of category C patients. Out of 102 patients, 64(62.74 %) patients had fever, 61 (59.80%) patients had diarrhea, 43(42.15%) patients had lymphadenopathy, 69(67.64%) patients had cough, 55(53.92%) patients had weight loss, and 9(8.82 %) cases had *Pneumocystis jirovecii* pneumonia, 34(33.33%) cases had oral candidiasis, 54(52.94%) cases had tuberculosis, 45(44.11%) patients had Herpes, subclinical hypothyroidism was seen in 14(13.72%) patients. Out of 102 patients 5(4.90%) patients were in stage 1, 26(25.49%) in stage 2, 60(60.78 %) in stage 3 and 9 (8.82%) were in stage 4. 8(23.50%) patients who are in category A had thyroid abnormalities, 4(8%) patients were in category B and 2(11.11%) patients were in category C. There was an inverse correlation between CD_4 count and thyroid function abnormality. 1(20%) patient out of 5 patients in stage 1 had subclinical hypothyroidism, 2(7.69%) patients out of 26 patients in stage 2, 9(14.51%) patients out of 62 were in stage 3 and 2(22.22%) patients were found to have subclinical hypothyroidism in stage 4. 10(22.22%) female patients out of 45 female patients and 4(7.01%) male patients out of 53 male patients were found to have subclinical hypothyroidism with female predominance. 4(21.01%) patients out of 19 patients were from age group 21-30, 3(8.33%) patients out of 36 patients were from age group 31-40, 6(16.66%) patients out of 36 patients from age group 41-50, and 1(10%) patient out of 10 patients from age group of 51-60 were found to have subclinical hypothyroidism. 8(34.78%) female patients out of 22 who are not on ART were found to have subclinical hypothyroidism however No male patient who is not taking ART found to have subclinical hypothyroidism. 2(9.09%) female patients out of 22 and 4(18.18%) male patients out of 22 who are on ART was found to have subclinical hypothyroidism.

DISCUSSION: It is important to diagnose and endocrine and metabolic disorders in HIV patients however they still remain neglected in HIV test management. This study was conducted in tertiary Institute 102 patients were randomly taken up for the study all the patients were thoroughly examined and investigated as per the proforma among these patients opportunistic infections, clinical characteristics and thyroid dysfunction were studied. Male percentage and female percentage is not compatible with Wilfredo Richard Engel et al.⁵ (76%) the reason behind this is that earlier studies mainly concentrated on male patients. the present study, almost equal number of male and female patients were enrolled. it has the advantage of studying thyroid function abnormalities in both male and female HIV patients. it will give a better view of thyroid dysfunction in HIV patients which was not possible in earlier studies. The highest age of distribution was found in 31 to 50 years age group as we are getting a maximum number of patients in the same age group. 70.58% of the patients are in the age group of 31-50 years and mean age of the patients was found to be 39.2 ± 9.38 years (21-65 years) maximum patients' sound to have their CD_4 between 200 to 350 range. With the date of clinical characteristics of 102 patients 69 patients had cough and 33 patients did not give history of coffee this may be because the most common opportunistic infection was found to be tuberculosis 6 with classic symptom of cough and expectoration. Fever is the second most common clinical feature in the present study most of the patients were presented with pyrexia of unknown origin and therefore were subsequently diagnosed with disease other common symptoms included diarrhea, weight loss and lymphadenopathy. Out of 102 patients enrolled in the study (13.72%),⁶ patients were found to have subclinical hypothyroidism with, (TSH >4.5) 86(86.27 %) patients were euthyroid. Of all the stage groups, stage 4 has the highest percentage of patients in subclinical hypothyroidism this may be due to the less number of patients in stage 4 and more number of patients in stage 3 therefore

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these observations requires further studies for confirmation. There was an Inverse correlation between cd4 count and thyroid function abnormality. 10(22.22 %) female patients out of 45 female patients and 4(7.01%) male patients out of 57 male patients had subclinical hypothyroidism. Maximum number of patients 9(25%) tested subclinical hypothyroidism in the age group of 31 to 50 years this may be due to maximum number of patients 63(61.76%) also in the same age group. There is no clear evidence that is subclinical hypothyroidism should be treated.⁷ Recommendations in the current guidelines are not to treat and therefore the value of identifying subclinical diseases those progress slowly to clinically significant disease is questionable. It must be acknowledged that thyroid dysfunction is often secondary to non-thyroidal illness and immediate treatment is not always appropriate. Changes in TSH in systemic illness generally are poorly understood. False positive and false negative results are not uncommon and so it is wise to be cautious before drawing conclusions regarding thyroid dysfunction and HIV infection until bigger studies are analyzed. also no clear mechanism is known for such proposed thyroid dysfunction as increasing numbers of women at diagnosed as HIV positive and as HIV infected population become older as a result of improved prognosis more thyroid diseases will be seen. Our study implies that the prevalence of subclinical hypothyroidism is likely to be similar to that observed in HIV negative population and that routine screening of this specific population is not necessary.

CONCLUSION: 102 HIV patients were randomly selected for the study 57(55.88%) are male and 45(44.11%) are female HIV patient with age range of 21 to 65 years. In the present study, out of 102 patients 44(43.11%) were on ART and 58(56.86%) were not on ART therapy. Cough was the most common symptom. 69(67.64%) patients had cough, 64(62.74%) had fever, 61(59.80%) had diarrhea, 55(53.92%) had weight loss and 43(42.15%) had lymphadenopathy. Opportunistic infections are present in the present study. Out of 102 patients Tuberculosis was present in 54(52.94%) cases and was the most common opportunistic infection, 9(8.82%) patients had pneumocystis carinii pneumonia, 34(33.33%) patients had oral Candidiasis and herpes was present in 45(44.11%) cases. Thyroid function test done in all 102 patients showed euthyroid in 86(86.27%) and subclinical hypothyroidism in 14(13.72%) patients. Out of 102 patients 5(4.90%) were in stage 1, 26(25.49%) in stage 2, 60(60.78%) in stage 3, and 9(8.82%) were in stage 4. Stage 4 has the highest percentage of patients with subclinical hypothyroidism. Among 102 patients who were grouped in various categories depending on CD₄ count there was a high incidence of thyroid dysfunction (23.50%) in category A patients which shows high incidence of thyroid dysfunction in HIV patients having low CD₄ count. 8(23.50%) persons were in category A had thyroid abnormalities, 4(8%) patients were in category B and 2(11.11%) patients were in category C and there was inverse correlation between CD₄ count and thyroid function abnormality. 10(22.22%) female patients and 4(7.01%) male patients were found to have subclinical hypothyroidism with female predominance. Maximum number of patients 9(25%) tested subclinical hypothyroidism were in the age group of 31 - 50 years. 8(34.78%) female patients out of 22 who are not on ART were found to have subclinical hypothyroidism. 2(9.09%) female patients out of 22 and 4(18.18%) male patients out of 22 who were on ART were found to have subclinical hypothyroidism. If HIV patient is having low CD₄ count and there is high chance of thyroid dysfunction. In view of high incidence of thyroid dysfunction in HIV patients screening for thyroid dysfunction in HIV patients with low CD₄ count can be considered.

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