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Assessment of Serum Thyroid profile concentration among Sudanese Marijuana abuse People

Selma Abdella Mohamed Saeed¹, Gad Allah Modawe², Shereen F. Abdelrahman¹, Abd Elkarim A. Abd rabo¹

¹Alneelain University, faculty of Medical laboratory science, clinical chemistry Department, Khartoum, Sudan.

²Omdurman Islamic university faculty of Biochemistry Department, Omdurman, Sudan.

*Corresponding Author:

Abd Elkarim A. Abd rabo

Email: abdrabokarim@gmail.com

Abstract: Marijuana induce alteration Hypothalamus and pituitary function and altered subsequently T3, T4 and TSH. To assess the Thyroid profile level(T3, T4, and TSH) in marijuana abuse .This case control study includes 120 Sudanese males (60 of them were marijuana abuse were considered as study group, and the other 60 healthy subjects were considered as control group ;were they do not use marijuana). All subjects were sex and age matched (age ranging between 18-60 years).Study group have addiction period between 1-37 years. This study carried in Alribatt hospital, Khartoum, from May to August 2015, serum was collected from both group and the concentration of T3, T4, and TSH were estimated using ELISA Bio TeK. There were a significant decrease in the level of the of T3, and TSH in marijuana abuse in comparsion with the control group where the (mean \pm SD) was (1.25 \pm 1.77, 1.18 \pm .69) for T3 and TSH respectively while the controls group had (mean \pm SD) (1.04 \pm .30, 1.91 \pm 1.21) for T3 and TSH respectively with p- value (0.00). But there was no significant difference in the level T4 when compared with the control group (9.99 \pm 4.16, 9.47 \pm 2.93) with p-value (0.19). This study concluded that T3 and TSH were highly significant decreased, but T4 were had insignificant change.

Keywords: cannabis THC (Tetra hydro cannabino), thyroid stimulating hormone (TSH), thiroxine (T4), _ triiodothyronine (T3)

INTRODUCTION

Cannabinoid are a group of psychoactive compounds found in marijuana [1] Cannabis is the most commonly consumed illegal drug and self reported consumption has continued to grow through 1990 [2]. THC is the most patent are abundant. Marijuna or its processed product Hashish can be smoked or ingested. Thyroid have wide spread effects on cellular metabolism. There synthesis and secretion are regulated by the thyroid stimulated hormone (TSH) from the anterior pituitary, which is turn is control by thyrotropin releasing hormone (TRH). Cannabinoid defect on thyroid function was noted in 1965 when marijuana extract was show to reduce Iodine accumulation in the rate thyroid [3]. Acute administration of THC in rodent reduce level of thyroxine and TSH by as 90% for up to 6 hours in addition, marijuana extract has been show to decrease the release of Radioactive iodine from the thyroid [6]. This effect are reversed by administration of exogenous TSH, suggesting a hypo thalamic site of action [5,6]. With chronic administration of THC however the thyroid depressant effect on cannabinoid is last, which may indicate the development of tolerance [5]. They are no data regarding the effect of canabinoids on thyroid function hormone. Cannabis usages in the form of marijuana cigarettes made from dried leaves,

Flowers and stalks of female cannabis sativa plant [7]. Adverse effect of chronic marijuana usage have been described upon the respiratory [8,9] and cardiovascular system [10] question remain regarding its effect upon reproductive system [11] and cellular and humeral immune system [12,13] cannabis smoke is mutagenic, in vitro and in vivo, this also suggesting carcinogenicity [14]. The Objective of this study was to measure the Thyroid profile.

MATERIALS AND METHODS

Study population

This study was conducted at Elribat hospital, Khartoum, from May to August 2015; Samples were collected from Sudanese prisoners of alhuda prison.

Study population

This case control study includes; 120 males (60 marijuana abuses as case study & 60 apparently healthy males as controls) their age ranging between 18-60 years. And marijuana abuse people have addiction period between 1-37 years.

Sampling

5ml of venous blood was collected under a septic precaution in a sterile plain container from

selected subjects .Then serum was separated by making a centrifugation for all samples by digital centrifuge 1500 rpm for 2 min. Then concentration of T3, T4, and TSH were estimated using ELISA Bio TeK.

Inclusion criteria

Marijuana abuse people as study group, normal healthy subject as control group.

Exclusion: criteria

Hypo or hyper thyroidism, psychiatric illness, liver disease, schizophrenia

Statistical analysis

The data obtained in our study was analyzed for its statistical significance using statistical package for social science (SPSS) software, evaluation of patient’s data was performed using the t-test results .P-value less than 0.05 was considered the level of significance.

RESULTS

Table-1: the (mean± SD) of male hormone in the study population:

Parameters	Mean ± SD	Mean ±SD	p-value
	Case no.= 60	Control no. =60	
T3	1.25±1.8	1.04±0.3	0.00
T4	9.9±4.2	9.47±2.9	0.19
TSH	1.2±0.7	1.92±1.2	0.00

DISCUSSION

In the present study, the effect of marijuana on the levels of thyroid profile (TSH, T4 and T3) was tested in 60 cannabis abuse male from alhuda prison and the values were compared to the level of 60 non users .Result of that T3 and TSH were highly significant decreased, T4 were insignificant change when compared with control .this results agree with the previous study [15, 6].

The level of thyroid hormone correlate significantly with levels of THC ,also our finding disagree⁽¹⁶⁾ with but other auther said that acute treatment with tetra hydrocannabinol cause increase in TSH and decrease in T3 and T4 (4)and there is only one study published on this subject , this study described subtle lower levels of T4 to cannabis abusers compared to control subjects but all of this values were within the standard range (16) TSH was not significant different between two groups [16] a study that was intended to relate thyroid function tests to serum THC levels in humans, which would provide more insights in the interplay of THC and thyroid hormones. In cannabinoid

effect of thyroid function was first notes in 1965 when marijuana extract was show to reduce iodine accumulation in the rate thyroid [3]. In addition marijuana extract has been shown to decrease the release of radioactive iodine from the thyroid [6]. These effects are reversed by administration of exogenous TSH, suggesting a hypothalamic site of action with chronic administration of THC, however, the thyroid depressant effect of cannabinoids is lost, which may indicate the development of tolerance [3] there are no data regarding the effect a cannabinoids on thyroid function in humans [5]. Studies on substance users are often difficult to conduct due to the hidden nature of their population their profiles differ widely from the general population however insight in to their characteristics can be gained by studying treatment seekers. Most of the study are cannabis have emphasized the philological aspect, not the physical harm, as it is often considered to lack major physical complicating [17].

CONCLUSION

Chronic cannabis usage associated with decreased T3, and TSH level but not significance change in the levels of T4.

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