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Estimation of Thyroid Nodules using TFT and Scintigraphy

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Abstract:-

- ***Introduction:***

This study aimed to find thyroid uptake and TFT values and to find the correlation between thyroid uptake and TFT in patients with thyroid nodules.

- ***Patients and Method:***

This study was made in Khartoum hospital for oncology and nuclear medicine in the department of nuclear medicine, at the period between Mar 2018 –Mar 2020. The data was collected from a total of 50 patients. Selection of the patients was generally upon every Sudanese female and male from all ages who were referred for thyroid scan with thyroid nodules.

- ***Result:***

The study found that there is significant correlation between the thyroid uptake and T3; where uptake can be estimated using T3.

- ***Conclusion:***

TFT can be used to diagnosis thyroid nodules alone.

Keywords:- *Thyroid Scan, Thyroid Nodules (TN), Thyroid Function Test (TFT).*

I. INTRODUCTION

The thyroid gland is considered as the most significant organs for the human endocrine system[1].The function of the thyroid gland contain the concentration of iodine, synthesis of thyroid hormones, storage of these hormones as part of the thyroglobulin (Tg) molecule in the colloid, and their secretion into the circulation as necessary [2]. Most T4-T3 in the serum (99.97%) is bound to thyroxine-binding globulin (TBG), prealbumin, and albumin. A part of (0.03%) circulates as unbound or free T4, which is the physiologically active form[3]. Thyroid nodules are usual common. They occur frequency in women than men. The incidence of both benign and malignant nodules rises with age[4].The thyroid scan has been the commonly used method for investigating a thyroid nodule, on the basis that finding a solitary cold nodule increases the probability of malignancy, whereas finding a functioning nodule or a simple multinodulargoiter without a single dominant nodule reduce the chance of malignancy to low levels [5]. Thyroid function tests provide information at physiological, pathological and anatomical levels. Beside with history and physical examination they owe to many specific findings that are related with thyroid functioning [6].

II. PATIENTS AND METHOD

This study was made in Khartoum hospital for oncology and nuclear medicine in the department of nuclear medicine, at the period between Mar 2018 –Mar 2020. The data was collected from a total of 50 patients. Selection of the patients was generally upon every Sudanese female and male from all ages who were referred for thyroid scan with thyroid nodules. Each patient had thyroid scan and TFT , than calculated the thyroid uptake, size, nodules number and size suing DIAG program. After that they were divided into three group according to number of nodules . Group A consisted of 44 patients with one nodule . Group B contained of 5 patients with two nodules, and Group C consisting of 2 patients with three or more. For data analysis we used SPSS.

III. RESULT

According to nodules number patients divided into three group, class one patient with one nodule , class two patient with two nodules, class three patient with three or more number of nodules. The study found that the correlation between T3 and thyroid uptake show that the rate of change T3 increase with value 0.735.

Table 1 shows the mean and standard deviation for all groups

variables	Mean	SD	Mean	SD	Mean	SD
	Group A		Group B		Group C	
Age	42.4± 13.6		56.8± 8		41.5± 0.7	
T3 pmol/L	5.1 ± 1.4		4.7± 2.4		14.1± 12.3	
T4 pmol/L	14.9± 7.4		14.3± 3.2		31.1± 21.2	
TSH mIU/L	1.3± 1.1		0.7± 0.6		0.3± 0.4	
Thyroid Uptake %	2.7± 1.6		3.3± 2.7		9.1± 10.8	
Thyroid SIZE cm2	33.4± 11		47.2± 16.6		48.4± 3.3	
Nodules size cm2	6.7± 3.6		7.9± 5.5		3.7± 0.3	

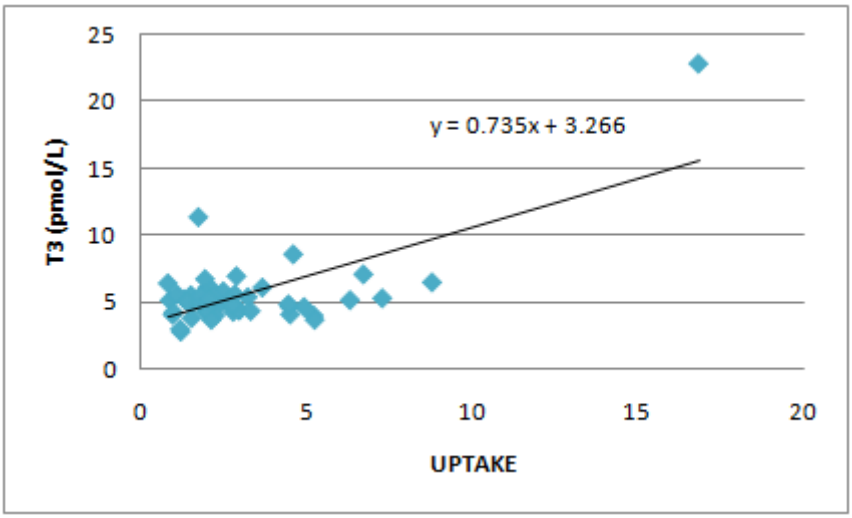

Figure 1 show the linear relationship between T3 and thyroid uptake

IV. DISCUSSION AND CONCLUSIONS

The study found that mean±SD measurement of age in group A is (42.4± 13.6) years, group B (56.8± 8) years, and group C (41.5± 0.7). The mean of the TFT (T3,T4, TSH) for group A was (5.1 ± 1.4, 14.9± 7.4, 1.37± 1.16), group B, (4.7± 2.4, 14.3± 3.2, 0.7± 0.6), group C (14.1± 12.3, 31.1± 21.2, 0.3± 0.4). For thyroid uptake group A (2.7± 1.6), Group B (3.3± 2.7), group C (9.1± 10.8). For thyroid size group A (33.4± 11), group B (47.2± 16.6), group C (48.4± 3.3). For nodules size group A (6.7± 3.6), group B (7.9± 5.5), group C (3.7± 0.3). The aimed of this study was to find the correlation between thyroid uptake and TFT in patients with thyroid nodules. A number of thyroid scan and TFT were conducted to estimate thyroid nodules numbers. There was significant correlation between T3 and thyroid uptake (we used T3 because of the strong relation between T3 and thyroid uptake as shown in Figure 1). The result was expected because of the physiology of thyroid gland since thyroid uptake has a direct proportion with the syntheses of thyroid hormone.

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