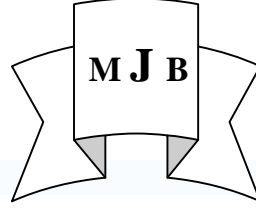


## Evaluation of Radioactive Iodine Therapy in Hyperthyroidism in Northern Area of Iraq

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### **Abstract**

237 patients with hyperthyroidism age range (between 20->60) years attended to nuclear medicine and radiotherapy hospital in Mosul during the period 2001-2003 treated by radioactive iodine 131 and followed for one year shows completely relieve from their symptoms after giving them suitable doses of radioactive iodine 131. The study sample showed that age group between (40-49) years was more affected than others in a percentage of (28.7%). Also the study discovered that females were more affected than males in a percentage of (62%) and (38%) respectively. Our study showed that the main cause of thyrotoxicosis was diffuse hyperthyroidism (46.4%), and the most appropriate given doses needed was (5-10)mc I131 which was about 37.1%. Finally our study revealed that radioactive iodine 131 therapy for hyperthyroidism was simple, Cheap and non invasive method of treatment .

### **تقييم علاج فرط الغدة الدرقية بمادة اليود المشع في شمال العراق**

#### **الخلاصة**

تمت معالجة 237 مريضا مصابا بفرط إفراز الغدة الدرقية ممن تتراوح أعمارهم بين 20 وأكثر من 60 من المراجعين لمستشفى الإشعاع والطب الذري في الموصل بمادة اليود المشع خلال الفترة 2001-2003 وقد تمت متابعة المرضى لمدة سنة بعد العلاج وقد اكتسب جميع المرضى الشفاء التام بعد إعطائهم جرعا مناسبة من هذه المادة. بينت الدراسة إن الفئة العمرية من (40-49) سنة كانت أكثر الفئات إصابة حيث شكلت نسبة (28,7%) وأوضحت الدراسة أيضا ان أكثر أسباب المرض هو فرط الغدة الدرقية المتجانس حيث كان عدد المصابين 110 (46,4%). كما أظهرت الدراسة إن الجرعة التي تتراوح بين (5-10) ملي كيبوري هي أكثر الجرع المناسبة للعلاج حيث كان عدد المستفيدين 88 أي ما نسبته 37,1%.

كما أظهرت نتائج الدراسة إن العلاج باليود المشع هو انسب الطرق لعلاج فرط إفراز الغدة الدرقية لكونه رخيصا ومتوافرا ويمكن إعادة إعطائه للمرضى بسهولة.

### **Introduction**

**H**yperthyroidism has recognized as the common disease all over the world affecting about 2% of women and 0.2% of men in the United

Kingdom [1]. Thyroid hormones play critical roles in the differentiation growth, metabolism and physiological function of virtually all tissues [2]. Patient with latent hyperthyroidism

(suppressed thyroid stimulating hormone and normal circulating thyroid hormones) are at risk to develop atrial fibrillation [3]. Mutations of the human thyrotrophen receptor are a cause of thyroid adenomas and hyperthyroidism [4].

Transport of iodide in to thyrocytes is a fundamental step in thyroid hormone biosynthesis and depend on the presence of the sodium – iodide symporter [5,6]. Radioactive iodine (131) is often used for treatment of hyperthyroidism because of its simplicity , its given in single dose , and minimal side effects , this is based on the fact that thyroid gland actively accumulates iodine which is used to produce thyroid hormones required for normal body function .This radioactive iodine is like the iodine found in nature except that it releases an electron or beta particle which create its therapeutic action [7, 8,9].

Radioactive iodine is an effective and relatively safe methods of treatment for hyperthyroidism beside the medical treatment with antithyroid drugs and surgical treatment. Physicians do not agree on the choice of primary therapy because it is evident that all of them are effective in controlling hyperthyroidism, but the time interval until euthyroid is obtained is most variable due to differences in the individual susceptibility to the treatment and the advantages and disadvantages of each method are different with different patients , so that the treating doctor should choose the appropriate method in the appropriate time ,the thyroid function after radioactive iodine 131 may also show a highly variable and unpredictable course and the patient should therefore be monitored relatively and closely in this period of treatment . the anti thyroid drug is discontinued before radioactive iodine administration

a transient hyperthyroidism relapse follow the treatment [10].

The goal of this study is to prove that the use of radioactive iodine 131 was a successful method of treatment especially in circumstance that Iraq had during the embargo were conditions of shortage of medical supply namely neomercazole and propyl thiouracil and also the surgical treatment were not easy due to limited facilities of surgical tools and anesthetic material while radioactive iodine was supplied and supported by the government in relatively cheap price at the time of study period (2001-2003) .

### **Materials and Methods**

The case records of 237 patients with hyperthyroidism treated at nuclear medicine and radio therapy hospital in Mosul were received during the period 2001-2003 .All the patient were Iraqies , most of them from Mosul city and northern region of Iraq.

All patients are subjected to full history and clinical physical examination including detailed thyroid gland and hormonal assessment with radioimmunoassay of T3, T4 and TSH, using a commercial kits .

The results showed all patients above the normal rang and often therapy dose with radioactive iodine revealed within normal because relevant data such as patients , age , sex , cause of hyperthyroidism were recorded , the mode of therapy chosen is radioactive iodine therapy because it is regarded the optimal methods due to shortage of antithyroid drug and surgical facilities due to the embargo settled on Iraq at the period 2001-2003 . The patients were considered cured if they are clinically and laboratory tests were normal for more than one year . Radioactive iodine therapy is given in capsule with different doses according to the age and state of hyperthyroidism .

Patients under the age of 18 years , or pregnant woman or lactating woman were excluded from this study .

**Results**

The study revealed that group age (40-49) years were the highly affected percentage of the study sample with hyperthyroidism in a percentage of (28.7%) and age more than (60) years was in percentage of (28.3%) while the age group (50-59) years in percentage of (25.3%), and (30-39) years of age wrrer (11.8%) and lastly (20-29) years of age in percentage of (5.9%) Table (1).

Out of 237 studied cases (147) were females patients and (90) males

meaning 62% , 38% respectively,Table (2).

Our study discovered that hyperthyroidism without goiter cases were the highly percentage of the causes in the study (46.4%) the toxic multinodular goiter was (27.4) while diffuse goiter with hyperthyroidism was (15.6%) and lastly toxic nodular goiter cases was (10.6%) Table (3).

The radioactive iodine dose given to the patients are of different quantity (4) patient given below 5mc, (88) patients between (5-10) mc, (87) patient between (10-15), 58 patient given (15-20) , all patients are clinically recovered from hyperthyroidism Table (4).

**Table 1** shows affection of hyperthyroidism in patient according to age groups

			Age group(year)		Percent. of male		Percent. of female	
	No.	%	No.	%	No.	%	No.	%
20-29	14	5.9%	6	42.85%	8	57.15%		
30-39	28	11.8%	12	42.85%	16	57.15%		
40-49	68	28.7%	30	44.12%	38	55.88%		
50-59	60	25.3%	21	35%	39	65%		
More than 60	67	28.3%	21	31.34%	46	65.66%		
Total	237	100%	90	37.79%	147	62.21%		

**Table 2** shows affection of hyperthyroidism in patient according to sex

Sex	patients	
	No.	%
Females	147	62%
Males	90	38%
Total	237	100%

**Table 3** shows affection of hyperthyroidism in patient according to cause of disease

Causes	cases	
	No.	%
hyperthyroidism with goiter	37	15.6%
hyperthyroidism without goiter	110	46.4%
Toxic nodular goiter	25	10.6%
Toxic multinodular goiter	65	27.4%
Total	237	100%

**Table 4** shows affection of hyperthyroidism in patient according to given doses

Amount of doses(mc)	patients	
	No.	%
2- 4.9	4	1.7%
5- 9.9	88	37.1%
10-14.9	87	36.7%
15-20	58	24.5%
Total	237	100%

### **Discussion**

Hyperthyroidism is a common endocrine disorder [3] increase incidence of this disease in Iraq as in other countries all over the world .Our study showed that predominately affected age group (40-49) years more than the age group (20-39) , there was no patient less than (18) years given radioactive iodine 131 and that similar to other studies [11].

The study also discovered that the females were more affected than males [1,12] the reason may be refered to tension and anxiety in females because of economic status and embargo imposed on Iraq during the study period.

Major percentage of patients were thyrotoxicosis (46.4%) from the sample followed by toxic multinodular goiter (27.4%) findings similar to other published studies [13]. All patients

treated by radioiodine 131 and all of them were completely cured, 88 of the patients were (37,1%) given 5-9.9 mc of radioiodine 131, so the usefulness of this drug is simple, cheap, easily initiated and the impact on the thyroid gland is reversible [4] and 87 patient (36.7%) were given high dose 10-14.9 millicure according to the size of the gland and the expecting thyroid uptake.

The treatment of thyrotoxicosis with radioactive iodine 131 is much more efficacious than medical or surgical modalities, furthermore it is by far the most effective and with little harmful effects [14]. Especially in Iraq during the period of study because of the imposed embargo and shortage of medical treatment and its unaffordable cost to the patient and due to lack of facilities for surgery due to shortage of beds in hospital

comparing that to the very relatively cheap price of radioactive iodine 131.

Keeping in mind that hypothyroidism within five years may be developed in patient receiving relatively high therapy dose but this easily treated with replacement therapy with thyroxin tablet .

### **Conclusion**

Radioactive iodine 131 therapy is non invasive ,feasible, and cost effective and repeatable with minimal side effect especially in condition like Iraq who suffer from embargo during the period of study .

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