Etiology and outcome of thyrotoxicosis at a University Hospital

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ABSTRACT

Objective: To determine the causes, clinical manifestations, mode of treatment, and outcome of hyperthyroidism at King Abdulaziz University Hospital.

Methods: A retrospective study of all cases of thyrotoxicosis diagnosed at King Abdulaziz University Hospital, Jeddah, Kingdom of Saudi Arabia, in the period between January 1997 to January 1999, that received a minimum of one year treatment.

Results: A total of 203 patients were seen with female: male ratio of 3.8:1 and mean age of 35.49+/-10.86 years. Graves' disease was the underlying cause in 69% of cases, toxic multi nodular goiter in 29%, and toxic adenoma and sub acute thyroiditis in 1% each. Palpitations, tremor, weight loss and nervousness were the commonest presenting manifestations. Forty-five (45%) of patients were treated with antithyroid drugs, 36% with radioactive iodine and 18% underwent subtotal thyroidectomy. Post radiotherapy hypothyroidism developed in 37% of patients.

Conclusion: Causes and clinical manifestations of thyrotoxicosis in our patients were comparable with those reported in the literature. There is under use of radioactive iodine therapy, and physicians should be encouraged to use this mode of therapy as its efficacy, safety and low cost made it the preferred definitive treatment in most patients with hyperthyroidism.

Keywords: Thyrotoxicosis, Graves disease, toxic multi nodular goiter, radiotherapy.

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Hyperthyroidism is a common endocrine disorder worldwide with a prevalence of 2 in 1000 in iodine-sufficient areas.[1] Several different disorders can cause hyperthyroidism. It is essential that the correct cause be identified, the presence and severity of symptoms be clinically assessed as this will guide physicians in selecting and timing treatment.[2,3] Radioactive iodine (RAI) has been used to treat hyperthyroidism for nearly 50 years.[4] The efficacy, safety and low cost of this therapy has made it the preferred definitive treatment in most patients with this disorder.[5] The causes, clinical manifestations of hyperthyroidism, its mode of treatment and outcome at King Abdulaziz University Hospital (KAUH) was not known, therefore, we conducted this study to determine these parameters at KAUH.

Methods. The medical charts of patients who had thyroid function test (TFT) carried out for them at KAUH in the period between January 1997 and January 1999 were reviewed. Patients who were diagnosed as having hyperthyroidism and received a minimum of one years treatment, with regular follow up in the clinic were included in the study. Patients seen in our hospital with thyrotoxicosis routinely have TFT using the electrochemolumences method,

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Table 1 - Clinical manifestations of 203 patients with thyrotoxicosis.

Symptoms	Patients No. (%)	Signs	Patients No. (%)
Palpitations	167 (82)	Diffuse goiter	145 (71)
Tremors	167 (82)	Multinodular goiter	53 (26)
Weight loss	167 (82)	Single nodule	5 (2.5)
Nervousness	143 (70)	Tremors	167 (82)
Heat intolerance	137 (67.5)	Exophthalmous	81 (40)
Increased sweating	131 (64.5)	Lid lag	66 (32.5)
Increased appetite	107 (53)	Lid retraction	61 (30)
Dyspnea	63 (31)	Ophthalmoplegia	31 (6)
Menstrual irregularities	55 (24)		
Diarrhea	52 (26)		
Fatigue	27 (13)		
Dysphagia	10 (5)		

thyroid scan using radioactive iodine 123, and antimicrosomal, antithyroglobulin antibodies using the indirect hemagglutination-technique. Relevant data such as patients' age, sex, cause of hyperthyroidism (Graves' disease, toxic multinodular goiter, toxic adenoma, sub acute thyroiditis or others), clinical presentation, mode of therapy (medical, radioactive iodine or surgical) and outcome (euothyroid, hypothyroid or hyperthyroid) were recorded. Statistical analysis was performed using the SPSS 7.5 (Statistical Package for Social Sciences). Mean +/- SD was determined for quantitative data, and frequency was determined for categorical variables. Chi-square was used to analyze group differences for categorical variables and a p value of < 0.05 was considered significant.

Results. A total of 203 cases were analyzed. The mean age was 35.49+/-10.86 years, with female: male ratio of (161:42) 3.8:1. Graves' disease (GD) was the underlying cause in 140 (69%) patients while 59 (29%) had toxic multinodular goiter and an equal number of patients had toxic adenoma and sub acute thyroiditis, 2 (1%), in each group. As shown in Table 1, palpitation, tremor, weight loss and nervousness were the most common clinical manifestations. Pretibial myxedema was found in 2 (1%) patients with GD, both had ophthalmopathy. One hundred and eighty seven patients (92%) were below 50 years while 16 (8%) were above 50 years. Patients above 50 years were more likely to present with palpitation and weight loss compared to those below 50 years, 15 (94%) versus 151 (81%) and 14 (87.5%) versus 153 (82%) (p 0.01, 0.56), and less likely to present with increased appetite 5 (31%) versus 102 (54.5%) (p 0.07). Initially patients were treated either with anti-thyroid drugs, radioactive iodine or surgery. Those who failed their initial treatment were given a different mode of therapy. Out of 203 patients, 92 (45%) patients were treated with anti-thyroid drugs only i.e. carbimazole or propylthiouracil with a beta-blocker. Radioactive iodine therapy was recommended for 37 (36%) patients with a mean dose of 10 mCi, while 36 (18%) patients underwent sub total thyroidectomy either due to big goiter with pressure symptoms or failure of medical therapy. The outcome of various modes of treatment are shown in Table 2.

Discussion. Thyrotoxicosis is an endocrine disorder that predominantly affects females.[6-8] In Saudi Arabia, we noticed an increase in the female predominance of hyperthyroidism over the last 10-years from 1.7[9] and 1.4[10] to 3.8 as noticed in our study. Graves' Disease is the commonest cause of hyperthyroidism followed by toxic multinodular goiter a finding similar to that reported by Sulimani et al.[9] Clinical manifestations due to sympathetic over activity are a common mode of presentation in patients with hyperthyroidism, which is consistent with what has been reported.[9] Pretibial myxedema occurs in 5% of patients with GD, most of them are older and nearly all of them have had both hyperthyroidism and ophthalmopathy,[11] a lower incidence of 1.4 has been found in our study. As described by Nordyke et al[12] and others[13,14] many

Table 2 - Outcome of different modes of therapy.

Mode of therapy	Euothyroid N (%)	Hypothyroid N (%)	Hyperthyroid N (%)	P value
Medical treatment only	66 (72)	11 (12)	15 (16)	<0.001
Radioactive iodine	43 (59)	27 (37)	3 (4)	0.04
Surgical treatment only	5 (56)	4 (44)		0.41

symptoms and signs of hyperthyroidism showed little change with age until after the 5th decade of life when weight loss and palpitations tend to increase while symptoms of increased appetite decreases, a finding in agreement with what we found in our study. Definitive therapies for hyperthyroidism are RAI, anti thyroid drugs and surgery. Two separate studies that surveyed the preference for treatment of hyperthyroidism revealed that practices vary widely among cohorts of physicians and among physicians of different countries.[15,16] Between 1984 and 1991, the approach to treating hyperthyroid diseases changed substantially among physicians in the United States[16] with a shift towards RAI and away from anti thyroid drugs, especially after confirmation of its safety and that the early concerns regarding the possibility of radiation-induced leukemia, thyroid cancer and unwanted genetic effects were unfounded.[17] A similar shift toward RAI treatment has been also noticed in Saudi Arabia where it was used in 9% of patients in a study conducted by Sulimani et al[9] in 1988 and has increased to 36% as noticed in our study. The primary drawback of RAI treatment is the high incidence of subsequent hypothyroidism.[18] Depending on the therapeutic strategy, researchers estimate that permanent hypothyroidism occurred in as many as 50-80% of patients. Low dose radioiodine treatment decreases the incidence of post-therapeutic hypothyroid disease and there is an almost linear relationship between the amount of administered radioiodine and the development of subsequent hypothyroidism.[17,18] In our study, 37% of the patients studied became hypothyroidism following RAI treatment.

In conclusion, the causes and clinical manifestations of thyrotoxicosis in our hospital are comparable with those reported in the literature. There is under use of RAI therapy, and physicians should be encouraged to use RAI therapy more as its efficacy, safety and low cost has made it the preferred definitive treatment in most patients with hyperthyroidism.

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