

Rate of autoimmune thyroid disease in thyroidectomised patients in Al-Yarmouk Teaching Hospital

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Abstract

Back ground: Autoimmune thyroid disease commonly presents as a goitre which may be diffuse or nodular and is usually associated with raised titers of thyroid antibodies, and usually affects 2-5% of the western Population.

Aim of study: To know the rate of autoimmune thyroid disease in thyroidectomised patients in Al-yarmouk teaching hospital.

Patients and methods: A prospective study performed in Al-yarmouk teaching hospital and Al-mustansiriya medical college, in which patients who underwent thyroidectomy for thyroid gland enlargement were included during a period of one year from March 2011 to March 2012. These cases have been assessed both clinically and by investigations including thyroid function tests, thyroid auto-antibodies (anti-thyroglobulin antibodies TG) and (anti-thyroid peroxidase antibodies TPO) , ultra-sound of thyroid gland and FNAC of thyroid gland, the results were compared to the histopathological results of the same patients, and P value calculated.

Results: sixty cases with goitre (operated upon) in the surgical wards of Al-yarmouk teaching Hospital were included, 10 cases had positive serological results for autoimmune thyroid disease (3 cases 5% Hashimoto's thyroiditis, and 7 cases 11.6% Grave's disease) were diagnosed and the diagnosis was proved by post-operative biopsy results. the commonest symptom was thyroid gland enlargement and the commonest age incidence was in the 4th decade.

Conclusion: These findings suggest the possibility of using quantitative indicators of thyroid auto-antibodies as predictors of the presence or absence of autoimmune thyroid disease in patients planned for thyroidectomy.

Keywords: Goitre, autoimmune thyroid disease, Hashimoto's thyroiditis, Grave's disease.

Introduction

Autoimmune thyroid disease including Grave's disease and Hashimoto's thyroiditis are prevalent autoimmune diseases, affecting up to 5% of the general population^[1], Autoimmune thyroid disease arise due to complex interaction between environmental and genetic factors, the major environmental triggers of autoimmune thyroid disease include iodine, medication, infection, smoking and possibly stress^[1], Autoimmune thyroid disease, Hashimoto's thyroiditis and Grave's disease are typical examples of such complex diseases and have been recognized for many years as having an important genetic component^[2] **Pathology:** Autoimmune thyroid disease is the most common organ-specific autoimmune disorder affecting 2- 5% of the population in western countries^[3,4]. Clinical presentation varies from hyperthyroidism in Grave's disease to hypothyroidism in Hashimoto's thyroiditis , genetic and environmental factors appear to interact leading to the appearance of auto-antigens and accumulation of professional antigen-presenting cells (APCs) in the thyroid, consequently, due to loss of immune tolerance, autoreactive immune cells activated by (APCs), invade the thyroid gland, interacting with thyroid cells in a battle for survival^[5].

Hashimoto's thyroiditis: The major cause of hypothyroidism in the adult population is Hashimoto's thyroiditis, which results in the formation of immune complexes and complement in the basement membrane of follicular cells This leads to impairment of T₃ and T₄ production, ultimately infiltration of lymphocytes result in fibrosis, which decreases the number and efficiency of individual follicles. As this immune

phenomenon continues a clinical hypothyroid state can occur in patients with persistent TSH-blocking antibodies^[6].

Grave's disease: Grave's disease is the most common cause of hyperthyroidism as (diffuse toxic goiter), This disease entity was originally described by an Irish physician, Dr. Robert Graves in 1835, women between the ages of 20 and 40 years are most commonly affected, The hyperthyroidism in Grave's disease is caused by stimulatory autoantibodies to TSH Receptor, although several theories about the stimulus that initiates production of these antibodies have been proposed, there is no universal agreement about the etiology of the process. Genetic susceptibility to this disease is possible as evidenced by the increased probability of Grave's disease in monozygotic twins^[6].

Clinical Feature: In Hashimoto's thyroiditis the most common presentation is that of a minimally or moderately enlarged firm granular gland discovered on routine physical examination or the awareness of a painless anterior neck mass, although 20% of patients present with hypothyroidism, and 5% present with hyperthyroidism (Hashitoxicosis which also is lobulated), an enlarged pyramidal lobe often is palpable .

While the clinical manifestations of Graves' disease can be divided into those related to hyperthyroidism and those specific to Graves' disease^[7].

Diagnosis: When Hashimoto's thyroiditis is suspected clinically, an elevated TSH and the presence of thyroid auto antibodies usually confirm the diagnosis. FNAC is indicated in patients who present with a solitary suspicious nodule or a rapidly

enlarging goiter. Thyroid lymphoma is a rare but well-recognized, ominous complication of chronic autoimmune thyroiditis and has a prevalence 80 times higher than expected frequency in this population than in a control population without thyroiditis ^[7]. An enlarged smooth thyroid mass and signs and symptoms of thyrotoxicosis suggest the diagnosis of Grave's disease, Iodine radionuclide scan demonstrates diffuse uptake throughout an enlarged gland, however, the absolute requirement of CT and ultrasound for preoperative assessment is not universally agreed on ^[6].

Treatment: In Hashimoto's thyroiditis, thyroid hormone replacement therapy is indicated in overtly hypothyroid patients with a goal of maintaining normal TSH levels treatment also is indicated in euthyroid patients to shrink large goitres, Surgery may occasionally be indicated for suspicion of malignancy or for goitres causing compressive symptoms or cosmetic deformity ^[7].

When a diagnosis of Graves' disease has been made, therapy is initiated rapidly to ameliorate symptoms and decrease thyroid hormone synthesis. This is particularly crucial for patients with vision-threatening exophthalmos. radioactive iodine ablation, or surgery, each of which is equally effective in normalizing serum thyroid hormone levels within 6 weeks, patients with Grave's disease need to be educated regarding appropriate choices, the risks associated with each treatment, and the expectation of complete success

Aim of study: To know the rate of autoimmune thyroid diseases in thyroidectomised patients in Yarmouk teaching hospital.

Patients and methods

This study is done for the first time in Al-yarmouk teaching hospital and Al-mustansiriya medical college, a prospective study which was performed during a period of one year from the 1st of March 2011 to the 1st of March 2012 , 60 cases were collected and reviewed, Patients were divided in to four groups according to the histopathological results:

Group I → Hashimoto's thyroiditis.

Group II → Grave's disease.

Group III → Colloid goiter.

Group IV → Malignancy.

P value results were calculated by Chi square test.

The final diagnosis has been proved by histopathological examination of the excised thyroid gland of the same patients and comparison of other methods of diagnosis to the histopathological results were done. the clinical assessment of patients was performed according to the symptoms and signs in special request form for each patient

Investigations: The following investigations were done for all patients :

1) Thyroid function test (T3 , T4 , TSH).

2) Thyroid auto-antibodies (TG , TPO).

3) U/S of the thyroid gland.

4) FNAC of the thyroid gland.

5) PCV, FBS , blood urea and indirect laryngoscope were performed pre-operatively.(pre-operative preparation)

6) X-ray of the neck.(when needed)

7) ECG.(when needed)

All thyroid function tests and thyroid auto-antibodies were done in the same laboratory (Iraqi diabetes center) Al-mustansiriya university by the same persons and the same Kits (IMTEC-TG & IMTEC-TPO antibodies).In all cases there was one indication or more for surgery including the presence of nodular goitre. Subtotal thyroidectomy was carried out in majority of cases and sent to the same histopathological laboratory in Al-Yarmouk teaching hospital.

Results

The youngest age was 17 year and the oldest age was 70 year, The mean age incidence was 37.4 ± 13.3 (S. D) years. There were 53 female cases and 7 male cases, and female to male ratio was **8:2** .

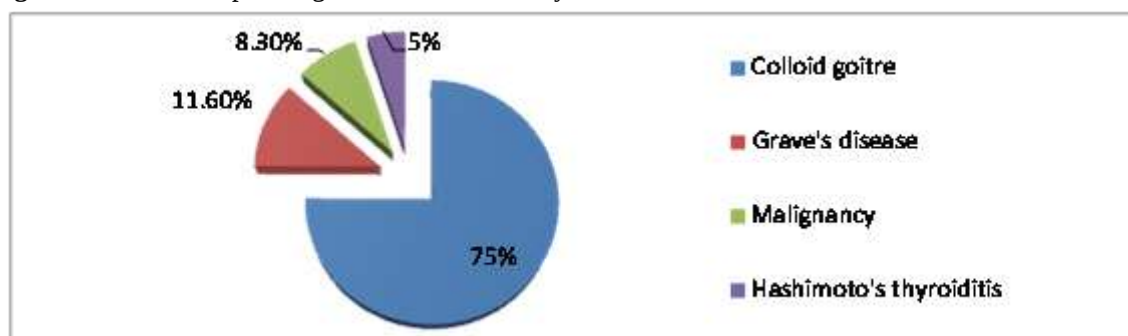
Regarding the age distribution in decades is shown in table No.1, the commonest occurrence of autoimmune thyroid disease (Hashimoto's thyroiditis and grave's disease) and colloid goiter was in the 4th decade, while malignancy cases occurred commonly in the 3rd decade.

Table No.1 : Age group distribution and percent of incidence

Age group	Hashimoto's No. (%)	Grave's No. (%)	Colloid goiter No. (%)	Malignancy No. (%)
10-19	0 0	1 14.2%	3 6.6%	0 0
20-29	1 33.4%	0 0	5 11.1%	3 60%
30-39	2 66.6%	3 42.8%	16 35.5%	0 0
40-49	0 0	2 28.5%	11 24.4%	1 20%
50-59	0 0	0 0	6 13.4%	0 0
60-70	0 0	1 14.2%	4 8.8%	1 20%
Total	3 5%	7 11.6%	45 75%	5 8.3%

The histopathological results of all cases are shown in figure 1.

Figure 1 : shows histopathological results of the sixty cases.



All cases of Hashimoto's thyroiditis were females (100%), and only two males (28.5%) were diagnosed as grave's disease and the other 5 cases were females (71.5%). all patients were presented with thyroid gland enlargement, The majority were multi-nodular (group I, 66.6% ; group II, 57.2% ; group III, 68.8% and group IV, 60 %).

The thyroid gland was firm in consistency in all patients of group I (100%), in patients of group II, the gland was firm in (71.5%) and soft in (28.5%).In

group III, the gland was firm in (77.7%), soft in (17.7%) and hard in (4.6%), while in group IV, the gland was firm in (80%) and hard in (20%).

Positive family history of thyroid disease seen in Grave's disease in (14.2%).

Pain and tenderness were only seen in fewer patients with Colloid goitre and Malignancy (4.4% & 20%, respectively), table No.2 showing symptomatology.

Table No.2 : Symptomatology in the four groups.

N0.	Symptoms	Hashimoto's (%)	Grave's(%)	Colloid goiter (%)	Malignancy (%)
1	Anterior neck swelling	100%	100%	100%	100%
2	Pain	0	0	2 (4.4%)	1 (20%)
3	Difficulty in swallowing	1 (33.4%)	6 (85.7%)	12 (26.6%)	3 (60%)
4	Difficulty in breathing	0	2 (28.5%)	6 (13.3%)	3 (60%)
5	Change in appetite	2 (66.6%) ↓ 1 (33.4%) ↑	4 (57.2%) ↓ 1 (14.3%) ↑	18 (40%) ↓ 7 (15.5%) ↑	2 (40%) 1 (20%)
	No change	0	2 (28.5%)	20 (44.5%)	2 (40%)
6	Body weight	1 (33.3%) ↑ 1 (33.3%) ↓	2 (28.5%) ↑ 5 (71.5%) ↓	15 (33.4%) ↑ 3 (6.6%) ↓	2 (40%) 1 (20%)
	No change	1 (33.3%)	0	27 (60%)	2 (40%)
7	Change in voice	0	0	0	1 (20%)
8	Heat intolerance	0	1 (14.3%)	6 (13.3%)	1 (20%)
	Cold intolerance	1 (33.4%)	0	4 (9%)	0
	No change	2 (66.6%)	6 (28.7%)	35 (77.7%)	4 (80%)
9	Menstrual disturbance	1 (33.4%)	3 (42.8%)	11 (24.4%)	0
10	palpitation	2 (66.6%)	5 (71.4%)	20 (44.4%)	2 (40%)
11	nervousness	0	3 (42.8%)	7 (15.5%)	1 (20%)
12	Eye changes	0	0	2 (4.4%)	0
13	Family history of thyroid disease	0	1 (14.2%)	6 (13.3%)	3 (60%)
Total		3 (5%)	7 (11.6%)	45 (75%)	5 (8.3%)

The physical signs of the four groups are shown in table No.3

Table No.3 : Physical signs in the four groups .

No.	Physical signs	Hashimoto's (%)	Grave's(%)	Colloid goitre(%)	Malignancy (%)
1	Pulse rate	Within normal	Within normal	Within normal	Within normal
2	Thyroid gland enlargement	100%	100%	100%	100%
3	Types: Multi-nodular Solitary nodule Unilateral Diffuse	2 (66.6%) 1 Rt. (33.4%) 0	4 (57.2%) 1 Lt.(14.3%) 2 (28.5%)	31 (68.8%) 14 (31.2%) 0	3 (60%) 2 (40%) 0
4	Tenderness	0	0	2 (4.4%)	1 (20%)
5	Consistency: Soft Firm Hard	0 3 (100%) 0	2 (28.5%) 5 (71.5%) 0	8 (17.7%) 35 (77.7%) 2 (4.6%)	0 4 (80%) 1 (20%)
6	Tremor	0	0	2 (4.4%)	1 (20%)
7	Irritability	0	0	3 (6.6%)	1 (20%)
8	Skin and hair	0	0	0	0
9	Eye signs	0	0	2 (4.4%)	0
10	Cervical L.N.	0	0	1 (2.2%)	2 (40%)
Total		3 (5%)	7 (11.6%)	45 (75%)	5 (8.3%)

Thyroid function tests (T3, T4, TSH) were performed in all patients. The results are shown in table No. (4).

Table No.4: Thyroid function tests results in the four groups.

	Hyperthyroid	Euthyroid	Hypothyroid	Total
Hashimoto's thyroiditis (%)	0	2 (66.6%)	1 (33.4%)	3 (5%)
Grave's disease (%)	0	7 (100%) Controlled pre-operatively	0	7 (11.6%)
Colloid goiter (%)	5 (11.2%)	39 (86.6%)	1 (2.2%)	45 (75%)
Malignancy (%)	0	4 (80%)	1 (20%)	5 (8.3%)

Thyroid auto-antibodies (TG, TPO) were performed in all patients, In Hashimoto's thyroiditis, TG and TPO were true positive in (two out of three cases 66.6%) and false negative in (one out of three cases 33.4%), while in Grave's disease the results of TG and TPO were positive in (two out of seven cases 28.5% and three out of seven cases 42.8%)

respectively, in colloid goiter cases, TG and TPO were positive in (two out of forty five cases 4.5% and four out of forty five cases 8.8%) respectively. while in malignancy cases, TG and TPO were false positive in (two out of five cases 40% and three out of five cases 60%) respectively.

Table No.5: Thyroid auto-antibodies results in the four groups

	TG	TPO	Total	P-value
Hashimoto's thyroiditis (%)	2 (66.6%) +ve 1 (33.4%) -ve	2 (66.6%) +ve 1 (33.4%) -ve	3 (5%)	>0.05
Grave's disease (%)	2 (28.5%) +ve 5 (71.5%) -ve	3 (42.8%) +ve 4 (57.2%) -ve	7 (11.6%)	>0.05
Colloid goiter (%)	2 (4.5%) +ve 43 (95.5%) -ve	4 (8.8%) +ve 41 (91.2%) -ve	45 (75%)	>0.05
Malignancy (%)	2 (40%) +ve 3 (60%) -ve	3 (60%) +ve 2 (40%) -ve	5 (8.3%)	>0.05
Chi-square P-value	14.95, = 0.0018 (positive)	14.84, = 0.0019 (positive)		

Ultrasonography of thyroid gland was performed in all patients. The diagnosis was not settled in all cases, but it was helpful in evaluation of thyroid

nodules, distinguishing solid from cystic one and providing information about size and multi-centricity

Table No. 6 : Shows Ultrasonographic findings

	Multi-nodular	Solitary nodule	Diffuse enlargement
Hashimoto's thyroiditis	2 (66.6%)	1 Rt. (33.4%)	0
Grave's disease	4 (57.2%)	1 Lt. (14.3%)	2 (28.5%)
Colloid goiter	31 (68.8%)	14 (31.2%)	0
Malignancy	3 (60%)	2 (40%)	0

Fine needle aspiration cytology was performed by palpation guided FNAC in all patients. The diagnosis was positive in 1 case (33.4%) of group I with the demonstration of Hurthle cell in the

aspirated specimen, while, in other 2 cases of group I (66.6%) were labeled as colloid goiter, In group II, FNAC was performed and the diagnosis was possible in 3 cases (42.8%) table No. 7.

Table No.7: FNAC results relative to histopathological results.

	FNAC		Correct diagnosis		Colloid goiter		Histopathology results	
	No.	%	No.	%	No.	%	No.	%
Hashimoto's thyroiditis	3	100%	1	33.4%	2	66.6%	3	100%
Grave's disease	7	100%	3	42.8%	4	57.2%	7	100%

Discussion

In this study the gender distribution in group I resemble that mentioned by Hiroshi E. et al (2008)^[8], who reported that Hashimoto's thyroiditis is more common in women than men in a ratio of 9:1 and also agree with results of Zygmunt H. Krukowski, (2008)^[3], who mentioned that Grave's disease usually occurs in women.

Our results disagree with that mentioned by M.R.Helvaci, et al(2006)^[9], who found that age peak incidence in autoimmune thyroid disease is in the 5th decade, but agree with that mentioned by Benvenga S. et al(2008)^[10], who demonstrated a change in age of presentation which has been decreased, similar to our age incidence, 4th decade, The close similarity between these two condition, Hashimoto's thyroiditis and Grave's disease regarding age and sex distribution may reflect the close relation to each other, Nazar Taha Makke. et al (1999)^[11].

Our results regarding age incidence in malignancy cases is one decade younger than that mentioned by Geeta Lal (2009)^[7], who said that the mean age of presentation is 30-40 years but agree with that of Lisa M. Roche (2011)^[12], a large number study, which reported that thyroid cancer can occurs in each sex, in nearly all age groups, this younger age incidence may be attributed to many genetic factors and exposure to many environmental and nutritional factors, It should be noted that our results had included only symptomatic patients, who were proved by histopathology, and the small number of collected cases was because of the short period of study and the high cost of the kit of the immunological tests, the assessment of thyroid auto-antibodies of all patients with goitre (screening) may change the figures and percents.

Regarding signs and symptoms all patients were presented with thyroid gland enlargement (goitre), however; the degree of thyroid enlargement and it's type were extremely variable, This finding is in agree with Sinclair D. (2006)^[13], and Hueston WJ. (2001)^[14], who described the profound variation in the thyroid symptomatology and the type of goitre from case to case, The majority of our cases were multi-nodular goitre in both groups, group I , 66.6% and group II , 57.2% by clinical examination and U/S findings, These results agree with those of Geeta Lal (2009)^[7], who has found that palpation usually demonstrates a diffusely enlarged thyroid

gland which also is lobulated and also agree with that reported by M.R.Helvaci. et al (2006)^[9], who concluded that autoimmune thyroiditis and operations for multinodular goitre mainly done for women and most of multi-nodular goitres are probably related to autoimmune thyroiditis.

In the majority of our cases, the thyroid gland was firm in consistency, all cases of group I, and 71.5% of group II ,this agree with Johannes Ott. (2011)^[15], who reported that patients with Hashimoto's thyroiditis often reveal thyroid gland enlargement which is firm in consistency, while our results in group II agree with that of Zygmunt H. Krukowski. (2008)^[3] who said that the goitre in grave's disease may be large or small, firm or soft.

Our results regarding dysphagia and dyspnea may agree with that reported by Johannes Ott.(2011)^[15], and Hadj-Kacem H.(2009)^[16] who found that since patients suffering from Hashimoto's thyroiditis often reveal thyroid glands that are diffusely enlarged, irregular, firm and more adherent to the adjacent structures, Positive family history of thyroid disease seen in group II, 14.2% one out of seven patients, However, this finding may agree with those of Zygmunt H.krukowski, (2008)^[3], who mentioned that 50% of patients of Grave's disease have a family history of autoimmune endocrine disease.

Thyroid function tests showed euthyroid state in the majority of our cases, 66.6% of group I, two out of three cases, and 100% of group II , seven out of seven cases, and this agree with that mentioned by Nazar Taha Makke. Et al (1999)^[11], who reported that thyroid function tests in Hashimoto's thyroiditis showed euthyroid state in majority of cases. Hypothyroidism in group I , 33.4% and this may resemble to that mentioned by John B. et al. (2008)^[6], who said that the major cause of hypothyroidism in adult population is Hashimoto's thyroiditis, No signs of hyperthyroidism has been seen in group II patients, and this was due to the medical preoperative preparation of patients to euthyroid state before surgery(controlled cases).

Regarding group III, thyroid function tests showed euthyroid state in 86.6% of the cases, hyperthyroidism in 11.2% of the cases and only one case 2.2% with hypothyroidism (thyroid auto antibodies TG and TPO) were positive in that case which means coexistence of Hashimoto's thyroiditis with colloid goiter as mentioned in histopathological

report and serum tests for auto-antibodies, Pisanu A. et al (2003)^[17], had found that the frequency of coexisting Hashimoto's thyroiditis and benign thyroid disease is 6.7% which is slightly higher than our results and this may be related to small number of cases collected in our study, In group IV, the patients were euthyroid in 80% and one case with hypothyroidism 20% with positive thyroid auto-antibodies (TG and TPO) in the same time which indicate the coexistence of autoimmune thyroiditis with thyroid malignancy (papillary carcinoma), This agree with that reported by Pisanu A., et al (2003)^[17], who concluded that the frequency of the association of Hashimoto's thyroiditis and differentiated thyroid cancer was 23.8% as compared to 20% in our study, TPO and TG were positive in 66.6% , two out of three patients in group I, which are lower than that reported by Gilmour J. et al (2000)^[18], who showed anti-TPO positive results in 86% of patients with Hashimoto's thyroiditis but anti-TG showed positive results in 58% which is close to that found in our study. While in group II anti-TPO was positive in 42.8% , three out of seven patients, and anti-TG was positive in 28.5% , two out of seven patients, these results also are lower than those reported by Gilmour J. et al (2000)^[18], who showed anti-TPO and anti-TG were positive in 87% and 73% respectively, These variations are related to small number of cases in our study in comparison to the large number of cases in that reported by Gilmour J. et al (2000)^[18], 65 individuals with Hashimoto's thyroiditis and 38 with Grave's diseases.

In group III, TPO was positive in 4 out of 45 patients 8.8%, and TG was positive in 2 out of 45 patients 4.5%.

In group IV, TPO was positive in 3 out of 5 cases 60%, and TG was positive in 2 out of 5 cases 40%.

These findings may be related to the coexistence of Hashimoto's thyroiditis with differentiated thyroid cancer and benign thyroid disease which was reported by Pisanu A, et al (2003)^[17].

Ultrasonographic examination of the thyroid gland in both groups I and II did not yield useful specific diagnostic findings, Zimmermann, P. (1993)^[19], however, the U/S findings were helpful in evaluation of thyroid nodule especially in providing information about size and multi-centricity, Geeta Lal, et al (2009)^[7].

Fine needle aspiration cytology, although described as the most appropriate investigation, provided diagnosis in only one out of three patients of group I, 33.4%, and three out of seven patients of group II, 42.8%, This low diagnostic ability may be explained by the relatively limited experience with these diseases from the cytological point of view. The other possible explanation is that the aspirated sample is not representative because it was taken by palpation guided FNAC (unguided

by U/S.) from unaffected or minimally affected area of the gland by the cytologist.

This explanation is supported by the findings of Filip Gabalec, et al (2009)^[20], who found that the use of ultrasonography in FNAC increases significantly the sensitivity, specificity and accuracy compared with conventional palpation-guided FNAC.

It is very important to keep in mind that aspirates from Hashimoto's thyroiditis may be confused with Hurtle cell tumor, papillary carcinoma or malignant lymphoma, leading to the most significant indication for surgery in Hashimoto's thyroiditis , Nazar Taha Makke. et al (1999)^[11].

An overall incidence of autoimmune thyroiditis in group I, 5%; group II, 11.6%; group III, 75% and group IV, 8.3%, and the total rate of Autoimmune thyroiditis will be 16.6%.

Fleischmann A., et al. (1999)^[21], reports a comparable incidence of up to 6.6% of thyroiditis caused by lymphocytic infiltration in histopathological studies which is a little higher than our results, while our result regarding Grave's disease was slightly lower than that reported by P Laurberg, et al (2012)^[22], who found that the incidence of Grave's disease was 16.1%, large no. of cases and long period of the study.

Regarding malignancy, our results agree with that mentioned by Johan B. et al. (2008)^[6], who said that the incidence of carcinoma in multinodular goitre has been reported to be 5-10%.

Conclusions & Recommendations

-The peak age incidence of symptomatic autoimmune thyroiditis (Hashimoto's thyroiditis) is in the 4th decade followed by 3rd decade, females are commonly affected more than males.

-The spectrum of clinical presentation is very wide. The only feature which is present in all patients is thyroid gland enlargement (goitre), the type of goitre is variable with predominance of multi-nodular variety.

-Positive family history wasn't observed in Hashimoto's but seen in Grave's disease, colloid goiter and malignancy.

-The results of thyroid auto-antibodies were detected in almost all patients with Hashimoto's thyroiditis and fewer patients with Grave's disease, colloid goiter and malignancy.

- The use of US-guided FNA by expert and efficient cytologist should be applied to improve the diagnostic value of this investigation. The considerable association, as well as confusion of these diseases with malignant disease of the thyroid gland should be kept in mind when FNAC results are dealt with.

-A further larger study for a longer period of time in many centers is recommended to have more accurate result and to know our accurate incidence.

References

1. Tomer Y, Huber A. The etiology of autoimmune thyroid disease: a story of genes and environment. *J autoimmun.* 2009; 32 (3-4): 231-9.
2. Terry F. Davies, Rauf Latif, Xiaoming Yin. New genetic insights from autoimmune thyroid disease. *Journal of Thyroid Research* , 2012,web.med. article ID 623852, 6 pages
3. Zygmunt H. Krukowski, The thyroid and Parathyroid gland R.C.G. Russll and Norman S Williams. Bailey and Love's Short Practice of Surgery, 25th edition Oxford University Press Inc.; 2008 P.: 775-785.
4. Sgarbi JA, Maciel RM. Pathogenesis of autoimmune thyroid disease. *Arq Bras Endocrinol Metabol.* 2009; 53(1): 5-14.
5. Stelios Fountoulakis and Agathocles Tsatsoulis. On the pathogenesis of autoimmune thyroid disease: a unifying hypothesis. *Clinical Endocrinology* 2004; 60; 397-409.
6. John B. Hanks, Leslie J. Salomone, MD. Thyroid. Sabiston Textbook of surgery. 18th edition 2008; P.: 953-969.
7. Geeta Lal, Orlo H. Clark, Thyroid and Parathyroid. Schwartz's Principle of surgery.(2009) 9th edition.; P. 1353-65.
8. Hiroshi E. Takami, Rika Miyabe, Kaori Kameyama. Hashimoto's Thyroiditis: World J. Surg.(2008) 32 : 688-692.
9. Helvacı, F. Ozcura, A. Ozkan, H. Dayioglu. What a high prevalence of autoimmune thyroiditis and thyroidectomy in women: *J, Med, Sci.,* 2006 (4): 654-657.
10. Benvenga S, Trimarchi F. Changed presentation of autoimmune thyroid disease in north-eastern Sicily and Calabria (Southern Italy) based on a 31-year experience. *Thyroid* 18: 2008, 429-441.
11. Prof. Dr. Nazar Taha Makke, Abdulla Shaman (1999). Autoimmune thyroiditis Clinical and Histopathological study. Thesis presented to the Arab Board as candidate requirement, P 23-24.
12. Lisa M. Roche, Xiaoling Niu, Karen S, Pawlish, and Kevin A. Henry. Thyroid cancer incidence in new Jersey: time trend, birth cohort and socioeconomic status analysis (1979-2006). *Journal of Environment and public health* (2011), article ID 850105, 10 pages.
13. Sinclair D. (2006). Clinical and Laboratory aspect of thyroid auto-antibodies. *Ann. Clin. Biochem.*: 2006,43: 173-183.
14. Huesto WJ. Treatment of hypothyroidism. *Am. Fam. Physician.* 2001; 64: 1717-1724.
15. Johannes Ott. Moritz Meusel. Andrea Schultheis. Regina Promberger. Shannon Joan Pallikunnel. Nikolaus Neuhold. Michael Hermann. The incidence of Lymphocytic thyroid infiltration and Hashimoto's thyroiditis increased in patients operated for benign Goiter over a 31-year period.: *Virchows Arch* (2011); 459: 277-81.
16. Hadj-Kacem H, Rebuffat S, Mnif-Feki M, Belguith-Maalej S, Ayadi H, Peraldi-Roux S.. Autoimmune thyroid disease: genetic susceptibility of thyroid-specific genes and thyroid autoantigens contributions. *Int. J. Immunogenet*, 2009; 36: 85-96.
17. Pisanu A, Piu S, Cois A, Uccheddu A. Coexisting Hashimoto's thyroiditis with differentiated thyroid cancer and benign thyroid disease: indication for thyroidectomy. *Chir Ital*, 2003; 55(3): 365-72.
18. Gilmour J, Brownlee Y, Foster P, Geekie C, Kelly P, Robertson S, Wade E, Braun HB, Staub U, Michel G, Lazarus JH, Parkes AB. The quantitative measurement of auto-antibodies to thyroglobulin and thyroid peroxidase by automated microparticle based immunoassays in Hashimoto's thyroiditis, Grave's disease and follow-up on postpartum thyroid disease. *Clin Lab.* (2000); 46(1-2): 57-61.
19. Zimmermann, P. Ultra-sonography of thyroid gland in pregnancies complicated by autoimmune thyroid disease. *J, Clin, Ultrasound*, 1993; 21(2) : 109-3.
20. Filip Gabalec, Jan Cap, Ales Ryska, Tomas Vasatko, Vera Ceeova. Benign fine needle aspiration cytology of thyroid nodule: to repeat or not to repeat? *European Journal of Endocrinology* (2009);161; 933-37.
21. Fleischmann A, Hardmeier T Die autoptisch normale Schilddrüse: ein relative seltener Befund. *Schweiz Med Wochenschr*, 1999; 129: 873-882.
22. P Laurberg, DC Berman, IB Pedersen (2012). Incidence and clinical presentation of moderate to severe Grave's orbitopathy in a Danish population before and after Iodine fortification of salts.2012; 97 no. 7, 2325-32.

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