

Research Article

Frequency of Autoimmune thyroid disease and its relation with age and gender

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Abstract

Autoimmune thyroid disease (AITD) is an autoimmune disease that particularly affects the Thyroid Gland. It is a frequently found condition. Thyroid Autoimmune Disease is in the list of autoimmune disease that carries 30% weight of all the organ-specifically autoimmunity. In Pakistan, the number of new cases of hyperthyroidism are less i.e. 2% when weighted against hypothyroidism. This study is cross-sectional, carried out in 415 patients visiting IRNUM hospital, public sector cancer hospital. Convenience sampling technique was used, and patient of all ages were included in study. A total of 415 samples were collected from both males and females. Out of these 415, 111 tested positive. 80 patients had a Hashimoto's Disease and remaining 31 suffered from Grave's Disease. According to the study, the prevalence of Hashimoto's Disease in both females and males was 16.626% and 2.651%. In case of Graves' disease, the prevalence was 1.92% in male and 5.54% in female. Based on our findings, the Prevalence of these diseases is high in females as compared to males. Autoimmune thyroid disease has a prevalence of 26.74% in our population. Hashimoto's disease (16.626%) was found more prevalent than Graves' disease (2.651%). The dominant age for both the conditions is 30-50 years.

Keywords: Autoimmune thyroid disease (AITD), Graves' disease, Hashimoto's disease

Introduction

Autoimmune thyroid disease (AITD) is an autoimmune disease that particularly affects the Thyroid Gland [1, 2]. Thyroid autoimmunity means to the existence of antibodies against thyroperoxidase, thyroglobulin, or antibodies for thyroid-stimulating hormone (TSH) receptor (TRAbs) [3, 4]. The human AITDs broadly include Hashimoto's thyroiditis (HT), Graves'Disease (GD), Atrophic Autoimmune Hypothyroidism, Postpartum

Thyroiditis (PPT) and Thyroid Associated Orbitopathy (TAO). Of these four disorders, Graves'Disease (GD) and Hashimoto's Thyroiditis (HT) are the common ones for thyroid gland dysfunctions and no endemic goiter [2, 5, 6]. The telltales of GD are thyrotoxicosis and hypothyroidism for HT. Both the conditions are identified by infiltration of the thyroid by lymphocytes and the generation of thyroid autoantibodies [7, 8]. Multiple factors are responsible for AITD. Genetic, environmental and constitutional

factors are responsible for vulnerability to the condition [9]. Of all the genes that make a person at risk for AITD, HLA-DR gene along with non-MHC gene not to mention the CTLA-4, CD40, PTPN22, thyroglobulin, and TSH receptor genes [10]. Iodine, medications, infection, smoking, stress are the substantial factors that set of the disease. Additionally, genetic predisposition to AITD leads to unique supposed processes by which the genetic-environmental interactions may culminate thyroid auto immunity [11]. Thyroid Autoimmune Disease is one of the autoimmune diseases that carries 30% weight of all the organ-specific autoimmunity [2]. In Pakistan, the number of new cases of hyperthyroidism are less i.e. 2% when weighted against hypothyroidism [12]. Globally, around 1% men and 2-4% women suffer from the condition. Unfortunately, the prevalence rises with age [1]. If iodine is sufficient in the body, Hashimoto's Thyroiditis is suggested to be the most prevalent cause [13, 14]. Annually and globally, new cases of Hashimoto's Thyroiditis are predicted to be 0.3-1.5 cases per 1000 person. 5 in 10,000 persons are estimated to have Graves' Disease [6]. (6) 5% is the estimated prevalence of autoimmune thyroid Diseases (AITD), Graves' disease (GD) and Hashimoto's Thyroiditis [6, 15-17]. Unattended and untreated disorders of the Thyroid can result in some dangerous corollary particularly Cardiovascular Diseases [18]. The aim of this study was to found Thyroid Autoimmune Disease in patients of KP and its demography.

Materials and Methods

The study was performed cross-sectional, carried out in 415 patients by visiting IRNUM hospital, public sector cancer hospital. Convenience sampling technique was used, and patient of all ages were included in study. The trained staff took 5ml of blood from the patient. It was centrifuged. Eppendorf tube was used to collect the

serum. To evaluate autoimmune thyroid diseases anti TR kit and Anti TPO kit was applied. Samples were stored in KMU laboratory at -20°C. The analysis was performed by using the IBM SPSS 21 statistics software.

Results

The collected samples were 415 in number from both males and females (Figure 1; Table 1). Out of these 415, 111 tested positive. 80 patients had a Hashimoto's Disease and remaining 31 suffered from Grave's Disease. The prevalence of Hashimoto's Disease was 16.626% and 2.651% in females and males, respectively. In Graves' disease, the prevalence in both male and female was 1.92 % and 5.54 % respectively. Male to female ratio in Grave's Disease was 1:2.875 and Hashimoto's Disease was 1:6.273. To summarize, this autoimmune disease highly prevails in females when weighted against males. Age is categorized in 3 ways, younger than 30 years, between 30 and 50 years and greater than 50 years. Hashimoto thyroiditis is found more prevalent in between the ages of 30 and 50 years which is about 53 (66.25%) whereas the age younger than 30 years and higher than 50 is 14 (17.5%) and 13 (16.25%) respectively. Likewise, the prevalence of Graves' disease is common 13 (41.935%, N=13) (35.48%, N=11) in age between 30 and 50 years. Graves' disease found in less than 30 years and higher than 50 years age is 11 (35.48%) and 07 (22.58%) respectively. Hashimoto's (Male 2.651%, Female 16.626%) is more prevalent than Graves' disease (Male 1.92%, Female 5.54%). Out of total 415 samples, 111 were found positive for Hashimoto and Graves' disease. Of 111, 80 (19.28%) had Hashimoto's disease and 31 (7.47%) were found positive for Graves' disease. Autoimmune thyroid disease has a prevalence of 26.74% in our population. It is found high in female compared to male. Hashimoto found more in female compared

to male in ratio of 6.273:1. Hashimoto's and Graves' disease are found commonly between the ages 30-50 years. Hashimoto's Disease had prevalence of 16.626% and 2.651% in females and males, respectively.

The prevalence of Graves' disease in both male and female was 1.92 % and 5.54 % respectively. Autoimmune thyroid disease has a prevalence of 26.74% in our population.

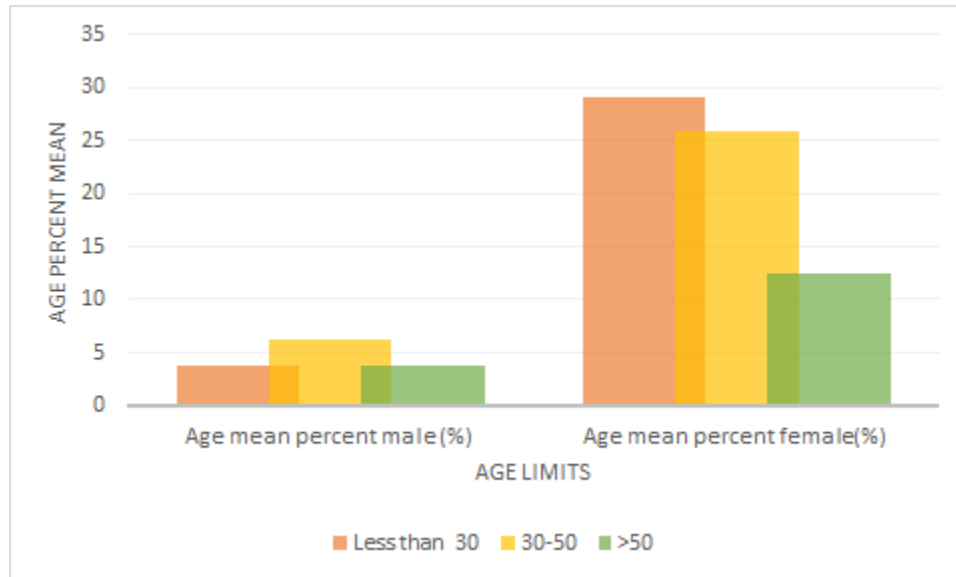


Figure 1. Patients mean age and gender frequency

Table 1. Hashimoto and Graves' disease Frequency (and Percentage)

Variable	Frequency	Percentage
Male		
Hashimoto disease	11	57.89
Graves' disease	08	42.11
Total	19	100
Female		
Hashimoto disease	69	75
Graves' disease	23	25
Total	92	100
Hashimoto disease		
Less than 30 Years	14	17.5
More than 30 and less than 50	53	66.25
More than or equal to 50	13	16.25
Total	80	100
Graves' disease		
Less than 30 Years	11	35.48
More than 30 and less than 50	13	41.9354
More than or equal to 50	07	22.58
Total	31	100

Discussion

Attuallah [12] supports our results of prevalence of Autoimmune Thyroid Disease in women. In that study, the prevalence in women was 74.8%. Hashimoto's Thyroiditis is common in 16.626% of women as compared to men where 2.651% have the disorder. The results of a study by Ahmed [19] depicts the same. They concluded that 91.28% had Hashimoto's Thyroiditis against 8.72% of men. A study conducted by Rizvi [20] has similar results as our study. They had a greater number of women as compared to men having Hashimoto's thyroiditis. The percentages are 16.5% of women and 7.2% men. Similar study was also conducted by Manji [21] which shows that Graves' Disease and Hashimoto's Thyroiditis are more prevalent in females. Figures, when compared, are 40.0% against 47.4% and 51.7% against 56.4% in Hashimoto's Thyroiditis and Grave's Disease respectively.

Conclusion

Based on the findings, Hashimoto's and Graves' disease highly prevail in females when studied against male Autoimmune thyroid disease has a prevalence of 26.74% in our population, in which Hashimoto's (16.626%) was found more than Graves' disease (2.651%). Hashimoto's and Graves' diseases are found commonly between the ages 30-50 years.

Authors' contributions

Conceived and designed the experiments: M Jawad & M Zahid, Performed the experiments: M Jawad, A Rizwan, A Wahab, F Saeed & SIU Haq, Analyzed the data: M Zahid & A Wahab, Contributed reagents/materials/ analysis tools: M Jawad, A Rizwan & F Saeed, Wrote the paper: M Jawad & SIU Haq.

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