

Epidemiological and Clinical Aspects of Autoimmune Dysthyroidism in Internal Medicine at Aristide Le Dantec Hospital

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Abstract

Introduction: Autoimmune thyroiditis is relatively common in medicine. However, comprehensive studies are few in number, especially in Africa and particularly in Senegal. The aim of this study was therefore to determine the epidemiological, clinical, profile of Autoimmune Thyroid Diseases (OITD). **Materials and Methods:** This was a retrospective descriptive study from 2016 to 2019 of the records of patients who consulted or were hospitalised for autoimmune dysthyroidism in the internal medicine department of the Aristide Le Dantec Hospital. During this period, 1227 new consultations were recorded; they concerned three specialized consultations including endocrinology. The autoimmune origin was confirmed in 159 patients, *i.e.* in 45.69% of cases the AIDM then 12.96% of all consultations. The autoimmune origin was established on clinical, biological and immunological grounds. The data were collected from the medical records of the patients and recorded on a pre-established individual survey sheet taking into account the objectives of the study. The data collected was entered into the Sphinx V5 software on an established form. The analysis was carried out with the following software: Excel 2010 and Epi info 7.2. **Results:** Among this dysthyroidism, 159 patients had a confirmed autoimmune thyroid disease. On all new consultations, OITD represented 12.96% of internal medicine consultations. The sex ratio M/F was 0.18. The majority of our patients (57.86%) were aged between 25 and 44 years with extremes ranging from 11 to 63 years. In Graves' disease, the notion of an irritative spine was found in 60.27% of cases. Signs of thyrotoxicosis were present in 92.7% of cases. There was a goiter in 81.1% of cases with a vascular character in 76.47% of cases. Anti-THR antibodies were positive in 96.15% of cases. Complications were noted in 9 patients (6.5%) such as cardiothyreosis in 8

patients (5.7%) and malignant orbitopathy noted in 1 patient (0.8%). In Hashimoto's thyroiditis, signs of hypometabolism were evident in 87.50% of patients. Anti-TPO antibodies were positive in all patients. All patients had received thyroid hormone supplementation. Thyroid autoimmune disease was associated with other autoimmune diseases in 6.2% of cases. **Conclusion:** Autoimmune thyroiditis is common in our daily practice in Senegal; it is dominated by Grave's disease. Hypothyroidism was the most common manifestation of Hashimoto's thyroiditis. The inaccessibility of antithyroid antibody testing is an obstacle to the diagnosis and management of these conditions.

Keywords

Autoimmune Thyroid Disease, Graves' Disease—Hashimoto's Thyroiditis, Antibodies, Dakar

1. Introduction

Thyroid autoimmunity is a model of organ-specific autoimmune disease. Thyroid autoimmune diseases present with a wide range of clinical manifestations in a predisposed genetic background. Common to all of them is the presence of an intra-thyroid lymphocytic infiltrate and circulating autoantibodies to thyroid gland constituents. There is a range of autoimmune thyroid diseases (AITD), the most common of which are Graves' disease and Hashimoto's disease with diverse clinical manifestations reflecting the multiple functions of thyroid hormones [1].

Autoimmune thyroiditis is very common, and epidemiological studies carried out worldwide have shown a resurgence of AITD affecting 2% - 4% of women and 1% of men [2].

In sub-Saharan Africa, very few studies have been carried out on these thyroid autoimmune disorders as a whole. In Conakry, according to a study by Kake *et al.* [3], autoimmune thyroid disease accounted for 34.5% of thyroid disease consultations. In Senegal, studies on AITD as a whole are almost non-existent to our knowledge.

The aim of this study was to determine the epidemiological, clinical and AITD profile in the internal medicine department of Aristide Le Dantec Hospital in Dakar.

2. Patients and Methods

This was a retrospective descriptive study of patients with autoimmune dysthyroidism who consulted or were hospitalised in the internal medicine department of Aristide Le Dantec Hospital during the period from January 2016 to December 2019. During this period, 1227 new consultations were recorded; they concerned three specialized consultations including endocrinology. Among them,

348 patients had either 28.36% dysthyroidism. Among these dysthyroidism, the autoimmune origin was confirmed in 159 patients, *i.e.* in 45.69% of cases the AIDM then 12.96% of all consultations.

All records of patients who were hospitalised or followed up in the department for autoimmune dysthyroidism were included.

The diagnosis of these conditions was made on clinical and paraclinical grounds, in particular by measuring specific antibodies.

Graves' disease is a combination of hyperthyroidism with one or more of the following signs: acquired exophthalmos, vascular goiters, and or presence of antithyroid antibodies (anti TSH receptor, anti-TPO).

Hashimoto's disease was considered when there was clinico-biological hypothyroidism and anti-TPO antibody positivity with or without signs of dysthyroidism.

The data were collected from the patients' medical records and recorded on an individual survey form that had been prepared in accordance with the objectives of the study.

The parameters studied were epidemiological and clinical: on Graves' disease and Hashimoto's thyroiditis, para-clinical: TSHus, anti TSH receptor antibodies, anti-TPO, associated autoimmune pathologies.

The data collected was entered into the Sphinx V5 software on a previously established form. The analysis was performed with the following software: Excel 2010 and Epi info 7.2.

3. Results

Epidemiological data

From January 2016 to December 2019, 348 patients had consulted for dysthyroidism out of 1227 new consultations, hospital prevalence was 28.36%. Among these dysthyroidism, 159 patients had confirmed autoimmune thyroid disease, a prevalence of (12.96%) on all new consultations. Two types of autoimmune thyroiditis were found: Graves' disease, which was the most frequent in 138 patients (86.8%), and Hashimoto's thyroiditis in 21 patients (13.2%).

The majority of patients with autoimmune dysthyroidism ($n = 137$) were female. Among patients with Graves' disease, 116 were female, a sex ratio of 0.18. All patients with Graves' disease were female ($n = 137$). All patients with Hashimoto's disease were female. Autoimmune dysthyroidism was most common in subjects aged between (25 and 44 years) with a frequency of 57.86% with extremes ranging from 11 to 63 years. A notion of familial thyroid disease was investigated in 93 patients (61.59%) and was noted in 17 (18.2%). Among the patients with familial dysthyroidism, Graves' disease was found in 29.41% of cases.

Data on autoimmune dysthyroidism

In Graves' disease, an irritative spine was noted in 60.7% of cases. Thyrotoxicosis syndrome was present in 128 patients (92.7% of cases). The main signs of thyrotoxicosis present in patients are summarized in **Table 1**.

Table 1. Distribution according to the signs of thyrotoxicosis.

Cardiovascular signs	Frequency (n)	Percentage (%)
Tachycardia	98	79.03
Palpitations	88	70.97
HTA	43	34.68
Dyspnea on exertion	23	18.55
Cardiovascular erythrim	2	1.61
Neuropsychological signs		
Trembling of the extremities	68	61.82
Insomnia	25	22.73
Irritability	7	6.36
Mood disorders	5	4.55
Psychomotor agitation	1	0.91
Other signs		
Weight loss	82	74.55
Thermophobie	55	50.00
Diarrhea	28	25.45
Muscle weakness	2	1.82
Amyotrophy	0	0.00

Goitre was present in 112 (81.1%). It was vascular in 76.47% of cases. Basedowian orbitopathy was noted in 123 patients. In our series, only one case of myxedema was noted, representing a frequency of 0.7%. Complications were noted in 9 patients (6.5%), such as cardiothyreosis in 8 patients (5.7%) and malignant orbitopathy in 1 patient (0.8%), who was treated in ophthalmology. Collapsed TSH was noted in 122 patients (88.4%) and was normal in 16 patients (11.5%). TSH antibodies were tested in 26 patients (18.8%) and were positive in 99% of cases. Anti-TPO antibodies were tested and were positive in 2 of our patients in **Table 2**.

Hashimoto's thyroiditis was manifested by a hypometabolic syndrome in all patients and a myxedematous syndrome in 8 patients (38%). Goitre was present in 6 patients (28.5%). We found 2 cases of myxedematous hydrothorax. TSH levels were elevated in all patients. Anti-TPO antibodies were positive in all patients in **Table 2**.

In this study, 10 patients (6.2%) had another autoimmune disease associated with autoimmune thyroiditis. These were organ-specific autoimmune diseases associated with thyroid autoimmune diseases: one myasthenia, 5 cases of Biermer's disease and 2 cases of adrenal insufficiency and two cases of lupus in **Table 3**.

Table 2. Distribution of patients according to the presence of autoantibodies in Grave's Basedow and thyroiditis Hashimoto.

Autoantibodies	Maladie de Basedow (n = 26)	Hashimoto's thyroiditis (n = 21)
Anti R-TSH	26	0
Anti TPO	1	21
Anti-thyroglobulin	1	0

Table 3. Distribution of patients by associated autoimmune diseases.

Associated autoimmune disease	Maladie de Basedow (n = 6)	Hashimoto's thyroiditis (n = 4)
Biermer disease	3	2
Slow adrenal insufficiency	1	1
Myasthenia	1	0
Lupus	1	1

4. Discussion

Autoimmune thyroiditis is relatively common in its various forms, dominated by Graves' disease and Hashimoto's thyroiditis [1].

These findings are consistent with the results of our study. In our series, these autoimmune dysthyroid accounted for 12.96% of new internal medicine consultations. Graves' disease was the most frequent (94.97%) autoimmune thyroid disease. This frequency is similar to that observed by Chabchoub in southern Tunisia [4]. Indeed, the incidence of AITD was 9.9%. Graves' disease was also the most frequent, found in 44.95% of cases; primary myxedema in 32.25% of cases and Hashimoto's thyroiditis in 22.8% of cases.

In our series, Hashimoto's disease represented only 13.2% of all autoimmune thyroid disorders. In the study by Kake in Conakry [3] the prevalence of Hashimoto's thyroiditis was higher than ours, noted in 28% of cases. In our study, the prevalence of Hashimoto's disease was lower compared to the different studies. This low frequency could also be explained by the rather limited duration of our study and also by the non-accessibility of routine antibody testing for the diagnosis of autoimmunity related to the economic context.

Autoimmune thyroid disease is more frequent in women. Estrogens are partly responsible. Another factor could be the existence of a bias in the inactivation of the X chromosome [5]. In southern Tunisia, Chabchoub G. [4] reported a sex ratio of 0.2 in favor of women [4]. Our figures confirm the female predominance of these autoimmune thyroid diseases: the female gender represented 86.16% with a sex ratio of 0.18. Most of our patients (57.86%) were aged between (25 and 44) years. In Conakry, Kake *et al.* [3] found in his work on autoimmune thyroiditis a mean age of 41.81 years. These results are in agreement with the literature according to which the age of onset of autoimmune dysthyroidism is 34

years in Graves' disease [6] and between 30 and 60 years in Hashimoto's thyroiditis [7].

The occurrence of Graves' disease in families with thyroid or autoimmune disease has often been described in the literature. In France, Thieblot [8] in his study found a 30% history of familial thyroid disease in his patients. In Tunisia, according to Chabchoub [4], a family history of ADI was found in 19% of cases, dominated by thyroid disease in 171 cases (83%) and type I diabetes in 35 cases (17%). In our work, among the patients with familial dysthyroidism, Graves' disease was found in 29.41% of cases.

In our study, the main signs of thyrotoxicosis found in patients with Graves' disease were tachycardia in 79.03%, weight loss in 74.55%, palpitations in 70.97%, tremors in 61.82% and thermophobia in 50.00% of cases. In Abidjan, Lokrou [9] noted similar results to ours. Tachycardia was also the most frequent symptom, in 82% of cases. Tremors and weight loss followed with frequencies of 72% and 66% respectively.

In western countries, notably France, Thieblot [8] estimated goiters at 80.8%. These results confirm those of our series, that goiter was almost constantly found in 136 patients or 90.06%.

In the literature, Basedowian orbitopathy is the most frequent extra-thyroidal manifestation and exophthalmos concerns 40% to 70% of patients with dysthyroid orbitopathy [10]. These results confirm the data from our study on the high frequency of Basedowian orbitopathy. Orbitopathy was present in 136 patients or 90.07%. Exophthalmos was in the majority at 98.53%. The African values are significantly higher than those found in the Arabic and Western literature. Indeed, there are known variations in exophthalmos from one race to another. It is less marked in Asians than in Caucasians, whereas it is more marked in black patients with narrower orbits [11].

In our study, we found 9 cases (5.96%) of complications, including 8 cases of cardiothyreosis (5.30%) and 1 case of malignant orbitopathy. In another study carried out previously in the same department by Diagne [12], complications were noted in 13 patients, including 12 cases of cardiothyreosis (11.1%) and one case of malignant orbitopathy. In Europe, the frequency of cardiothyreosis varied from 10% to 60% [13] depending on the mode of endocrinological or cardiological recruitment. The low frequency of cardiothyreosis in our study could be explained by the endocrinological mode of recruitment.

Collapsed ultrasensitive TSH was noted in 122 patients (88.5%) and was normal in 16 patients (11.5%). In Boiko's study [14] also, all his patients had a collapsed TSH level. The normal TSH levels found in our series can be explained by the fact that some of our patients were already monitored and undergoing anti-thyroid treatment. In the literature, TSH receptor antibodies have a diagnostic sensitivity of over 90%, especially in the absence of exophthalmos [15]. TSH receptor antibodies were positive in 96% of the 25 patients and negative in one patient who subsequently had an anti-TPO antibody test which was positive. For Boiko [14], these positive rates were 89% for RTSH antibodies and 65% for an-

ti-TPO antibodies. A study carried out in Morocco [16] found positive rates for RTSH and anti-TPO antibodies in 87.5% and 72.5% of cases respectively. The low rate of positivity of anti-TPO antibodies in our series compared to the various studies could be explained by the fact that its determination was not systematic. This is related to the high frequency of exophthalmos, which is a specific sign of Graves' disease, but also to the economic context in our country, which limits the demand for these tests.

Compared to Hashimoto's disease, in our study hypometabolism syndrome was noted in all patients and a myxedematous syndrome was found in 8 patients (38%). Goitre was present in 6 patients (28.5%). We found 2 cases of myxedematous hydrothorax. These results are different from those of Chabchoub G. [4]. Indeed, in his series, the mode of revelation of Hashimoto's thyroiditis was most often a hypo-metabolic syndrome in 69.9% of patients, 94% of whom had a goiter. It was hyperthyroidism associated with a goiter in 22.7% of cases (56) and goiter without other clinical signs of dysthyroidism in 7.4% of cases (23).

According to Boufaïda N. in Morocco, signs of dysthyroidism were present in 38% of cases with a goiter on cervical examination in over 52% of patients [17].

This difference in the results of clinical signs and the low prevalence of goiter could be explained by the relatively small number of patients with Hashimoto's disease in our study.

Antithyroid antibodies have an indisputable diagnostic value for Hashimoto's thyroiditis. Their sensitivity and specificity of over 95% make them the two immunological diagnostic markers for this disease [18]. In the literature, anti-TPO antibodies are found in 50% to 95% of patients with Hashimoto's thyroiditis depending on the study [19]. In our series, anti-TPO antibodies were present in all patients.

In this study, the prevalence of autoimmune thyroiditis associated with other autoimmune diseases was low, noted in 10 patients (6.2%). These were associated organ-specific autoimmune diseases: one myasthenia, 5 cases of Biermer's disease and 2 cases of adrenal insufficiency and two cases of lupus. This same prevalence has been noted in other studies. Indeed, in a previous study done in the same department by Diagne *et al.* [20], the prevalence of the association of autoimmune dysthyroidism and other autoimmune diseases was 8%. This same prevalence was noted in the study by Chabchoub [4]. An association with other autoimmune diseases was found in 68 cases (6.3%) dominated by adrenal insufficiency and type I diabetes in 27 cases (39.7%) each. On the other hand, in a study carried out in 2006 by Schachter [21], in 30 patients followed for another autoimmune disease, hyperthyroidism was associated in 10 patients, *i.e.* a prevalence of 33%.

5. Conclusions

This study shows the prevalence of autoimmune thyroiditis in Senegal in Medicine. Graves' disease remains the most frequent autoimmune thyroiditis. The predominance of women in this study is clearly demonstrated for both Graves'

disease and Hashimoto's thyroiditis. Autoantibody testing was not systematically performed in Graves' disease, due to the high prevalence of exo-phthalmos in this series. Complications were not frequent. These dysthyroid were associated with other autoimmune diseases, particularly organ-specific diseases, which should be systematically investigated at diagnosis.

Limitations of Our Study

Our study has some limitations due to incomplete information. Indeed, from the interview onwards: personal and family history, functional signs were not always specified. Some of the paraclinical examinations requested for some of our patients were not always carried out due to a lack of financial resources.

This study confirms that autoimmune diseases are frequent and their mode of onset is almost the same in Africa and in the West.

Our study shows the interest in following these patients, especially in Africa, because this autoimmune thyroiditis is sometimes associated with other autoimmune diseases, which can increase the morbidity of these pathologies.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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