

Clinical cytohistopathological study of benign thyroid disease in Sidi Bel Abbes region, western Algeria

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Background and objective

Benign thyroid disease is the most common disorder of the endocrine system. Our study aimed to analyze the clinical and cytohistological diagnosis of benign thyroid disease in western Algeria (Sidi Bel Abbes region) as well as define the characteristics of this pathology.

Patients and methods

This was an epidemiological retrospective descriptive study of patients with benign thyroid disease, performed at the Department of Surgery, University Hospital Dr Hassani Abdelkader, in Sidi Bel Abbes, during the period of 10 years (from January 2004 to December 2013). The medical data were analyzed using the statistical package for the social sciences (SPSS, version 20.0).

Results

A total of 430 patients were recorded (33 men and 397 women). The average age of patients at diagnosis was 45.02 ± 13.41 years. Our survey demonstrated that 42.09% of the population had solitary nodular goiters, 27.44% had multinodular goiter, 21.63% of patients had binodular goiter, 5.35% had solitary nodule, and finally 3.49% were affected by goiter diseases. Fine-needle aspiration cytology analysis revealed that benign dystrophic lesion was present in most cases (25.93%), followed by hyperplasia (22.56%) and suspicion of malignancy (14.14%). Our results revealed that benign thyroid disease could be recurrent and hereditary. Histopathologically, colloid goiter, multinodular goiter, and vesicular adenoma were recorded in 23.75, 21.07, and 13.03%, respectively.

Conclusion

According to our results, benign thyroid disease in the region of Sidi Bel Abbes is a frequent health illness that is predominant in young women compared with young men of same age.

Keywords:

clinical, cytohistological, diagnosis, surgery, thyroid

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Introduction

Thyroid diseases are of great importance because most of them are amenable to medical or surgical management. They include goiter and mass lesions of thyroid [1]. It is endemic in many countries around the world. In fact, goiter is clearly the most common disorder of the endocrine system [2]. Moreover, thyroid nodules are more common in women, in older individuals, in those with a history of radiation exposure, or in those taking diets rich in goitrogens or diet deficient in iodine [1]. Nodules in the anterior part of the neck may have differential diagnoses, which include thyroid etiologies and extrathyroidal lesions [3,4]. Surgical treatment of benign thyroid disease is based on different result from diagnostic method. First, a clinical examination is carried out, which details the type of thyroid disease to determine whether it is goiter or nodular goiter. In addition, fine-needle aspiration cytology (FNAC) is carried out, which involves preparing smears from the thyroid nodules. It has significantly reduced surgery

on benign nodules [5]. The most of these nodules are benign, requiring no surgical intervention, but the symptoms associated with the nodule, such as difficulty in breathing, dysphagia or a change in voice, retrosternal extension, deviation of the trachea, and distortion, are indications for surgery [3,6]. The specimen should be described as a total thyroidectomy, left lobectomy, or right lobectomy (with or without isthmus). The specimen should be weighed, measured, and then the external appearance should be described on the report of histopathology diagnosis [7]. This study aimed to describe the clinical and cytohistological profile of benign thyroid disease in western Algeria (case of Sidi Bel Abbes region).

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Patients and methods

Our retrospective study was performed using a database of 430 patients with benign thyroid nodule who had been diagnosed at the Surgery Department of the University Hospital Center Dr Hassani Abdelkader of Sidi Bel Abbes region, from 2004 to 2013. The studied parameters were age, sex, clinical examination, cytopathology outcome, surgery history of patient, recidivism period, surgery treatment of patient and their family medical treatment, and also their histopathology outcome. Only patients with confirmed pathological benign thyroid disease were included for the analysis. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Statistical analysis

Statistical analysis was carried out using statistical package for the social sciences (SPSS) statistics (20.0, August 2011; IBM Corporation, Chicago, Illinois, USA).

Results

Our report was based on 430 patients operated of benign thyroid nodule, including 33 men and 397 women. Their ages ranged from 16 to 83 years, with an average of 45.02 ± 13.41 years. Thyroid disease was more common in women than in men, with a female-to-male ratio of 12.03: 1. The most affected age group was 41–60 years, comprising 45.59% female and 60.60% male patients (Table 1). As regards the reason of surgery, in 42.09% of the cases it was solitary nodular goiter, in 27.44% multinodular goiter (three nodules and more), in 21.63% binodular goiter, in 5.35% solitary nodule, and in 3.49% it was goiter diseases (Table 1).

Table 2 shows that 25.93% of our patients had a benign dystrophic lesion, 22.56% had hyperplasia, 14.14% had a suspicious malignancy, and 12.45% had a benign cystic dystrophic lesion.

Table 3 shows that the majority of our patients (94.19%) did not benefit from previous surgery, whereas 2.77% of patients were treated with left lobeisthmectomy and the same percentage of patients underwent right lobeisthmectomy. The average recidivism period was about 14.31 ± 11.13 (mean \pm SD) (range: 2–37 years). We noticed that, after stopping hormone therapy for 1 year in two patients, the duration of recurrence of nodule was 5 years. Thus, surgical treatments that

were performed over the patients were as follows: total thyroidectomy (47.21%), right lobeisthmectomy (26.51%), left lobeisthmectomy (25.58%), left lobectomy (0.46%), and right lobectomy (0.23%). As regards family surgical treatment, we found that 3.54% of the mothers were treated with total thyroidectomy for goiter and 2.21% of the sisters had undergone total thyroidectomy for goiter. Family medical treatment was as follows: 9.39% for goiter, 0.47% for nodules, 0.47% for hyperthyroidism, and 0.47% for hypothyroidism.

Histological analysis reflected that the most common histological subtypes recorded in the database of our patients were colloid goiter (23.75%), followed by multinodular goiter (21.07%) and vesicular adenoma (13.03%) (Table 4).

Table 1 Patient's clinical features

Parameters	Number of cases	Percentage (%)
Gender		
Female	397	92.32
Male	33	7.67
Age		
Female/ Male		
(> 20)	11/1	2.77/3.03
(21- 40)	155/5	39.04/15.15
(41- 60)	181/20	45.59/60.60
(61- 80)	49/7	12.34/21.21
(< 80)	1/0	0.25/00
Clinical examination		
Solitary nodular goiter	181	42.09
Multi-nodular goiter	118	27.44
Bi-nodular goiter	93	21.63
Solitary nodule	23	5.35
Goiter	15	3.49

Table 2 Cytopathology outcome of benign thyroid nodule

Characteristics	Number of cases	Percentage (%)
Benign dystrophic lesion	77	25.93
Hyperplasia	67	22.56
Suspicious of malignancy	42	14.14
Cyst	37	12.45
Adenoma	30	10.10
Colloid goiter	11	3.70
Colloid nodule	9	3.03
Colloid nodular goiter	8	2.69
Inflammatory nodular goiter	2	0.67
Chronic thyroiditis on colloid goiter	2	0.67
Thyroiditis	2	0.67
Hashimoto's thyroiditis on goiter	2	0.67
Dystrophic lesion with thyroiditis	2	0.67
Chronic lymphocytic thyroiditis	1	0.34
Abscess	1	0.34
Subacute thyroiditis	1	0.34
Lymphocytic thyroiditis	1	0.34
Fibroadenoma	1	0.34
Lymphocytic thyroiditis on nodular goiter	1	0.34

Table 3 Patient's and family medical and surgical treatment

Characteristics	Number of cases	Percentage (%)
Surgery history of patient		
Absence	373	94.19
Left loboisthmectomy	11	2.77
Right loboisthmectomy	11	2.77
Lymph node biopsy	1	0.25
Surgery treatment of patient		
Total thyroidectomy	203	47.21
Right loboisthmectomy	114	26.51
Left loboisthmectomy	110	25.58
Left lobectomy	2	0.46
Right lobectomy	1	0.23
Surgery treatment of family		
Absence	204	90.26
Total thyroidectomy for goiter in the mother	8	3.54
Total thyroidectomy for goiter in one sister	5	2.21
Total thyroidectomy for goiter in two sisters	1	0.44
Total thyroidectomy for goiter in the mother and two sisters	1	0.44
Total thyroidectomy for goiter in the mother and brother	1	0.44
Total thyroidectomy for goiter in the mother and aunt	1	0.44
Total thyroidectomy for goiter in the two aunt	1	0.44
Total thyroidectomy for nodule in the mother and sister	1	0.44
Total thyroidectomy for nodule in the mother	1	0.44
Total thyroidectomy in the father (medullary cancer)	1	0.44
Loboisthmectomy for nodule in aunt	1	0.44
Medical treatment of family		
Absence	190	89.20
Family goiter	20	9.39
Family nodule	1	0.47
Family hyperthyroidism	1	0.47
Family hypothyroidism	1	0.47

Discussion

This retrospective cohort study assessed the incidence of thyroid disease and found that it was more common in women than in men, with a female-to-male ratio of 12.03: 1. This observation matched with many other previous investigations [8]. In our study, the most common affected age group among both women and men was 41–60 years.

Our study explains the different clinical forms of thyroid disease, which were goiter, solitary nodule, solitary nodular goiters, binodular goiter, and multinodular goiter. Throughout the world, goiter is clearly the most common disorder of the endocrine system. Many countries it is endemic, this is contradictory to our result, in which a low incidence rate of 3.49% was observed for goiter [2]. In contrast, the nodule could develop in a normal size of thyroid (solitary nodule), or as an increased thyroid volume but homogeneous

Table 4 Histopathology outcomes of benign thyroid nodule

Characteristics	Number of cases	Percentage (%)
Colloid goiter	62	23.75
Multi-nodular goiter	55	21.07
Vesicular adenoma	34	13.03
Goiter	27	10.34
Diffuse lymphoid hyperplasia	25	9.58
Nodular goiter	18	6.9
Goiter Basedow	7	2.69
Benign dystrophic lesion	7	2.69
Hashimoto's thyroiditis on colloid goiter	4	1.53
Colloid nodular goiter	4	1.53
Multi-nodular goiter with lymphocytic thyroiditis	3	1.15
Mesenchymal dystrophy	3	1.15
Inflammatory multi-nodular goiter	2	0.77
Villous adenoma	2	0.77
Multi-nodular goiter with subacute thyroiditis	2	0.77
Glandular dystrophy	1	0.38
Colloid multi-nodular goiter	1	0.38
Multi-nodular goiter with functional hyperplasia	1	0.38
Fibrocystic dystrophy	1	0.38
Hyperplasia parenchymal goiter	1	0.38
Hashimoto's thyroiditis on vesicular adenoma	1	0.38

(solitary nodular goiter), or within a binodular or multinodular goiter [9,10].

In thyroid disease, the FNAC is often used as the initial screening test for the diagnosis of thyroid nodules [11]. It is a well-established technique for preoperative assessment of thyroid nodules [12]. The FNAC is a cost-effective, less traumatic, less invasive, readily repeated, and easily performed procedure [11,13]. Important factor for the satisfactory test includes representative specimen from the nodule and an experienced cytologist to interpret findings [11]. There are four results from FNAC: malignant, benign, suspicious, and inadequate. Approximately 4% of the aspirates are malignant, 70% benign, 10% suspicious, and 17% inadequate for diagnosis [14]. In the literature, the most common type of thyroid nodule was benign nodules, requiring no surgical intervention [6]. That is why, our study described that the main indication for surgery of benign thyroid nodule requiring surgical intervention depends on the pathological characteristic of the nodule, which are suspicious cytological features, local symptoms, or neck disfigurement [5]. Mahar *et al.* [8] conducted a study on 125 cases, and they found that 63 (50.4%) cases were benign lesion. This percentage was close to our results reported in our study, in which benign thyroid nodule was observed in 58.18% of patients. Caruso and Mazzaferri [15] reported that 74% of

thyroid nodules were benign. Another study also showed that 83.33% cases were benign lesions [16]. Common diagnoses for thyroid nodules were as follows: thyroiditis in 80% of the cases, colloid nodule in 3.03%, cysts in 12.45%, and thyroiditis in 0.67% [4]. FNAC may cure a cystic nodule; for this reason, the aspiration of the cyst is usually all that is necessary [3,17]. In one study, 10–20% of all cytological specimens were suspicious [15]. An overall 2.77% of our patients had undergone left lobeisthmectomy and the same percentage of patients had undergone right lobeisthmectomy. These results confirmed the concept of recurrent thyroid nodule. Also, the recurrence of thyroid nodule was observed in patients who stopped hormone therapy, recurrence of thyroid nodule was observed. Fogelfeld *et al.* [18] explained the possibility of recurrence of thyroid nodules after surgical removal; the rate was 4.5 times higher in those who were not treated with thyroxine postoperatively than in those who were treated.

As regards the surgical treatment, total thyroidectomy was performed only in case of goiter, binodular goiter on the right and left lobes, or multinodular goiter. For solitary nodule and solitary nodular goiter, the simple unilateral lobectomy was sufficient. The hemithyroidectomy may preserve thyroid function. Cystic nodule surgery should be recommended if the cyst recurs after two aspirations [3].

In our survey, we report some cases of family members who underwent surgery or hormone therapy; this reflects that hereditary factor could trigger the structural and functional thyroid disease.

Our results on histopathological subtype of multinodular goiter are in accordance with those reported in others studies such as those of Salama *et al.* [19].

Conclusion

Our findings confirm the best interests of surgery in the treatment of benign thyroid disease. The clinical examination was very useful to distinguish between goiter and thyroid nodule. Cytological diagnosis was made for thyroid nodule. Before the surgery, this type of examination should be carried out to select operable

nodules. Systematically after surgery, all removed parts must be sent to the pathology department for confirmation of preoperative diagnoses.

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Conflicts of interest

There are no conflicts of interest.

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