



(RESEARCH ARTICLE)



Surgical hyperthyroidism: Epidemiological aspect and management difficulties in the visceral surgery department of the Donka National Hospital

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Abstract

Introduction: The aim of this study was to assess the epidemiological aspect and the difficulties associated with the surgical management of hyperthyroidism in our context. Hyperthyroidism is an over function of the thyroid gland resulting in thyrotoxicosis. Thyroidectomy is one of the Main treatments. It also uses synthetic antithyroid drugs, radioactive iodine.

Methodology: We carried out a descriptive 6-year retrospective from January 1, 2011 to December 31, 2017 inclusively. Our study variables were qualitative and quantitative,

Results: During our study, 26 cases were collected between January 2011 and August 2017 with a predominance of 73% female and an average age of 52, 78 years. The clinic was dominated by the signs of thyrotoxicosis which were found in all patients. The exploration identified 14 cases of toxic multi-hetero nodular goiter, ie 53.84%; 9 cases of basal disease 34, 66% and 3 cases of toxic adenoma 11, 54%. Medical preparation was required in all our patients

Total thyroidectomy was performed in one patient, i.e. 4%, and Lobo isthmectomy in 24 patients, ie 96%. Postoperatively, complications were collected: 1 case of intraoperative hemorrhage 20%; 1 case of postoperative hematoma 20%; 1 case of dysphonia 20%.

Conclusion: Surgery for toxic goiter known to be hemorrhagic and adherent should be performed after obtaining euthyroidism and double vigilance to minimize the morbidity represented mainly by laryngeal paralysis and hyperparathyroidism

Keywords: Hyperthyroidism; Epidemiology; Management; Donka National Hospital

1. Introduction

Hyperthyroidism (thyrotoxicosis) is an endemic disease caused by the excessive secretion of thyroxine (T4) or tri-iodothyronine (T3), or both. Both [1]

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However, in Graves' disease, the thyroid follicular cells will be stimulated by an antibody directed against the receptor for the pituitary thyroid stimulating hormone or thyroid stimulating hormone (TSH) [2]. While in lumpy goiter, the nodule (s) secrete thyroid hormones autonomously [3].

In most patients, serum T3 and T4 concentrations are elevated. Serum T3 alone may be the treatment for hyperthyroidism involves synthetic antithyroid drugs, radioactive iodine, and surgery [4]. Surgical treatment is dominated by subtotal thyroidectomy after cooling of the thyroid mass [5]. In Guinea, the management of hyperthyroidism is difficult and the frequency is becoming more and higher, in certain regions of Guinea, in particular because of the disorders related to iodine deficiency, and are among others the reasons for the drafting of this article.

2- Methodology this is a retro-prospective study over 6 years 8 months from January 2011 to December 2017 on 26 patients admitted and operated on for hyperthyroidism. We included in this study patients operated on in the department for toxic multiheteronodular goiter, basedow's disease, toxic nodule. We excluded incomplete and unusable files. We have drawn up an operating sheet including epidemiological, clinical, para-clinical, therapeutic, anatomopathological and evolutionary data. For ethical considerations, data collection was carried out with respect for the anonymity of patients and the confidentiality of their information.

3-Results Out of 118 cases of goitre operated on between January 2011 and August 2017 in the department, 26 cases were found to be toxic, i.e. 22.3%. We found 19 women 73.07% against 7 men 26.93% a sex ratio of 0.37 the average age of our patients is 52.78 years with extremes of 24 and 63 years. Most affected were 26-37 years, 38-49 years, 50-63 years with equivalent frequencies 26.92%, six of our patients had a family history of thyroid nodules 23.07%. The etiologies of hyperthyroidism were divided into goiter multiheteronodular 53.84%; basedow disease 34.61%; toxic adenoma 11.53%.

Table 1 Distribution of patients according to the etiological diagnosis of surgical hyperthyroidism

Etiological Diagnostic	Number of cases	Percentage
Toxic multinodular goiter	14	53,84
Graves' Disease	9	34,61
Toxic adenoma	3	11,53
Total	26	100

Table 2 Distribution of patients according to functional signs found on clinical examination

Clinical signs	Frequency (%)
Tachycardy	78,3
Asthénia	68,3
Weight Loss	39,5
Irritability	38,9
Excessive sweating	20,7
Tremor	21,3
Thermophobia	15,1
Exophtalmia	6,8

The signs of compression were present in 77% of our patients, none of our patients benefited from an indirect laryngoscopy which would inform us about the state of the vocal cords. A cervical ultrasound was systematic in all our patients and showed: An enlarged thyroid with nodules 53.84%; 14cases Diffuse thyroid enlargement without nodules 34.62%; 9cases Single tissue nodule in an enlarged thyroid 11.54%; 3cases None of our patients received a CT scan; an

MRI; of a biopsy The electrocardiogram was systematic in all of our patients and did not show any abnormalities. All of our patients underwent medical preparation by an endocrinologist for clinical and biological euthyroidism. The average time to take synthetic antithyroid drugs was six months with extremes ranging from one month to over seven months. After preoperative medical preparation, sixteen patients 16, ie 60%, had a normal rate of us TSH and FT4; six 6 patients or 26% had decreased us TSH levels and a normal FT4 level. Four 4 patients or 15% had a decreased us TSH level and an elevated FT4 level.

A subtotal thyroidectomy was performed in 24 patients or 92.30% a total thyroidectomy in 1 patient or 3.8%. Histopathology analysis of operative specimens was performed in 80.78% and basedow's disease was noted in 42.31% dystrophy in 23.08%. Operative consequences were simple in 76.52%: 1 case of Peroperative haemorrhage: 1 case of postoperative hematoma, 1 case of postoperative dysphonia. The drain was removed on day 2 day 3 and the average hospital stay was 4 days. The hypocalcemia was not objectified and the hematoma required urgent surgery. Long-term follow-up was not possible due to economic difficulties.

2. Discussion

Out of 118 cases of goitre operated on between January 2011 and December 2017 in our department, 26 cases were found to be toxic, i.e. a frequency of 22.03%. This low frequency could be explained by the loss of some files and the fact that some results were not correctly reported in the files.

In 2012 in one of the largest studies carried out by United States National Health and Nutrition Examination (NHANES III) involving 13,344 people; Tome et al [34] reported a prevalence of 1.3% of hyperthyroidism, of which 0.7% in infra-clinical settings. Recent epidemiological surveys in the United States and Europe show figures which vary between 1 and 0.4% depending on the inclusion of clinical and succinic forms [34]. 6% in southern Italy, most often due to multinodular goiter [10].

In our series, the age groups 26-37; 38-49; 50-61 were most affected the prevalence of hyperthyroidism appears to be higher in areas of iodine deficiency (26.92%).

The average age of our patients was 52.78 years with extremes of 24 and 63 years.

Between September and October 2013, in a study carried out on hyperthyroidism caused by the appearance of hyperfunctional nodules after 6-18 years from diagnosis; Sturniolo et al [10] reported a mean age of 73 years and extremes of 61 and 87 years. The sample included 220 patients treated in a general and gastrointestinal surgery unit in Rome.

In 2006, in a prospective study of 37 cases operated on at the Niamey National Hospital, Sani et al [12] reported an average age of 32 years in 2 years. These age groups correspond to periods of full hormonal activity and responsibility which are contributing factors.

The female sex was predominant in our study (73.07%), against (26.93%) for men; i.e. a sex ratio (M / F) of 0.37. Our result corroborates that of Sturnido et al [10] who reported that 91% of patients were women. In times of genital activity, the metabolism increases with the growth needs; which stimulates thyroid hormones to be more responsive to which women are more predisposed.

Some women have told us that it was during pregnancy that they saw the size change in thyroid mass.

In fact during pregnancy there may be transient gestational hyperthyroidism due to the increase in human chorionic gonadotropin in early pregnancy associated with thyrotropin (TSH) suppression and hyperemesis of pregnancy [35]. 57.76% of our patients were often uneducated merchants and housewives. This explains why they only consult in front of the signs of complications and directly in visceral surgery after having exhausted all traditional therapeutic resources.

The interior of the country provided most of the patients in our study (61.53%); against 30.76% for the special zone of Conakry

The interior of the country is full of iodine deficiency areas, which predisposes the population to develop thyroid pathologies including dysthyroidism From a clinical and paraclinical diagnostic point of view Anterior cervical swelling

and palpitation were the main symptoms in our series (100%), followed by irritability and tremor. These signs of thyrotoxicosis have been reported by N. Ismaili et al [1] and David. F et al [32]; in 2011 and 2014 respectively.

Patients consulted more frequently for signs of thyrotoxicosis and cervical compression.

Thyrotoxicosis syndrome is common to all varieties of hyperthyroidism; their intensity depends on the degree of thyrotoxicosis, its duration and the site [1]. Thirty-four point sixty-one percent (34.61%) of our patients had an evolution between 5 and 10 years.

This indicates the delay in consulting patients who only arrive at the stages of complications. Six of our patients had a family history of thyroid nodules (23.07%).

Regarding the use of synthetic antithyroid drugs, only one patient was subjected to them, without compliance. In Ismaili's series [1] all patients had previous treatment with synthetic antithyroid drugs. In our study, 11 patients presented signs of compression (42.31%); 6 cases of dyspnea (23.07%), 4 cases of dysphagia (15.38%).

No cervical lymphadenopathy has been clinically demonstrated. These different clinical signs show the advanced stage of the disease.

Our results corroborate those of Fadel [29] Daal [4] and Makeieff [21] who reported respectively 32%; 28%; 40% dyspnea and 24%, 4% and 12.9% dysphagia.

At the end of the physical examination, multi-nodular goiters ranked 1st 46.15%, followed by plunging goiters 23.07%

Cervico-thoracic radiography:

Its affordable cost has made it possible to perform it in patients with plunging goiter. It highlighted: 2 cases of enlargement of the upper mediastinum and 3 cases of tracheal deviation. The dyspnea was over Common in patients with dipping goiters.

2.1. Thyroid ultrasound

Thyroid ultrasound was ordered and performed in all patients. 34.61% of patients presented with diffuse hypertrophy of the thyroid without intraparenchymatous nodule and in 53.84% with diffuse hypertrophy. V. Desforges. Bullet et al [6], in their study on thymic hyperplasia and Graves' disease in the visceral surgery department of the Versailles hospital in 2011; reported an ultrasound result showing hyper vascularized goiter, bumpy contours and a distinctly heterogeneous echo structure without nodules, compatible with basal disease.

She also noted the presence of a retrosternal mass, the size and structure of which are difficult to analyze.

Prabhat.Jha et al [37]; in 2014; in the surgery department at Tribhuvan University Hospital in Kathmandu (Nepal); on pan cytopenia in a surgical patient; a rare presentation of hyperthyroidism ultrasound result of multiple heteroechoic nodules with calcification in both thyroid lobes.

2.2. Cervico-thoracic CT scan

No patient was able to do cervico-thoracic CT for lack of resources. This is an examination that would be able to confirm the thyroid origin of the media mass.

2.3. Scintigraphy

No patient benefited from the scintigraphy which would be able to determine whether the nodules were hot or cold.

Fine needle aspiration: was not performed.

2.4. Biology

All our patients benefited from the hormonal dosage (TSH, T3, and T4) which, together with the ultrasound and the clinical elements, made it possible to make the diagnosis of hyperthyroidism.

8 patients benefited from enzyme-linked immunosorbent assays for T4, T3 total and TSH. The extreme values of TSH levels were

0.01 to 1 $\mu\text{u} / \text{l}$ with an average of 0.46 $\mu\text{u} / \text{l}$. The TSH values are therefore within the limits of the standard.

The extreme values of T4 levels of 82.2 and 692.8 nmol / l with an average of 420.6 nmol / l . For T3, the extreme values were 6 and 19.2 nmol / l with an average of 10.84 nmol / l .

These results identified 8 cases of hyperthyroidism resulting in a concomitant rise in and T4 and T3 levels.

A single case of T3 thyrotoxicosis was identified resulting in an elevated level of T3 while the level of T4 is normal.

17 patients benefited from the assays of the free forms of T4 and T3 and of the ultra-sensitive form of TSH; the extreme values of TSH-US were 0.04 and 0.4 $\mu\text{l} / \text{ml}$ with a mean of 0.09 $\mu\text{l} / \text{ml}$.

The free T4 and TSH assays were sufficient for diagnosis in the majority of cases. TSH-US was low in 15 patients

FT4 was elevated in 13 patients ($> 20 \text{ pmol} / \text{L}$) and normal in two others. Only one patient did the FT3 dosage which was high, the value of which was 20 pmol / l . V. desforbes-bullet et al [6] in 2013 reported a diagnosis of hyperthyroidism made and confirmed with a collapsed TSH of less than 0.005 $\mu\text{u} / \text{ml}$; a free T4 and T3 raised respectively to 64.7 pmol / l and 28 pmol / l . A high level of T3 and T4 associated with little or no TSH level defines hyperthyroidism.

2.5. Etiological diagnosis

In our study, multihetero nodular goiter comes first with 53.84%, followed by basedow disease 34.61%. The diagnosis of the disease basedow was made on the triad: Clinical and biological thyrotoxicosis, diffuse homogeneous vascular goiter (3cas) Clinical and biological thyrotoxicosis, diffuse and homogeneous avascular goiter and exophthalmos (1cas)

Clinical and biological thyrotoxicosis, multi-nodular goiter on palpation and ultrasound (5cases) the other etiologies are suspicious diagnoses.

Toxic adenoma in association with clinical and biological thyrotoxicosis and tissue thyroid nodule on ultrasound.

Toxic Multiheteronodular Goitre (GMHT) in front of clinical and biological thyrotoxicosis associated with an old heterogeneous multi nodular goiter on ultrasound.

In terms of diagnosis, it is particularly acute in countries like ours where resources are very limited. Our patients all benefited from hormonal tests, a thyroid ultrasound and an electrocardiogram (ECG).

This study allowed us to note the difficulties specific to our context which seriously hinder the diagnosis of patients suffering from hyperthyroidism and partly justifying the lack of performance of other very useful tests.

The lack of certain means of investigation such as scintigraphy, scanner, dynamic tests, assay of anti-thyroid autoantibodies.

The high cost of hormone assays In view of these difficulties, we recommend with regard to hyperthyroidism in our context, the determination of free T4 and TSH associated with a thyroid ultrasound and an ECG as appropriate.

Ismaili Alaoui [1] in 2011 reported 4 cases of Graves' disease out of a sample of 7 observations.

Biet, [17] in 2009 in postoperative complications following total thyroidectomy for Graves' disease reported that the disease de Basedow would represent 1 to 2% of the general population.

In fact, with regard to hormonal dosages, it is emphasized that the dosages of free T4 and TSH are sufficient to make the diagnosis in the majority of cases.

Treatment with synthetic antithyroid drugs preoperatively was instituted in 3.8% ($n = 1$).

In addition to the difficulties of diagnostic management, therapeutic management also experienced problems:

Lack of certain therapies, such as isotopic treatment Breakdown of synthetic antithyroid drugs The high cost of drugs, the long duration of medical treatment (several months or even several years) makes it difficult for certain patients to comply with it, especially the elderly, and the often-untimely interventions of traditional therapy All these difficulties are at the origin of problems not only of diagnostic orientation but also of therapeutic management.

These same difficulties have been reported by Desforges Bullet et al [18]. The management of thyrotoxic conditions is based on the mechanism that determined the thyroid hyperhormonemia.

In our study, subtotal thyroidectomy was performed 92.30% (n = 24).

This result corroborates those of Ismaili [1] and Bilosi et al [11] who reported 80% and 100% subtotal thyroidectomy, respectively.

Subtotal thyroidectomy offers a better chance of maintaining functional calcium levels even if there is a risk of recurrence on the stump.

Total thyroidectomy was only performed in a patient where the multi-nodular goiter was very adherent and hemorrhagic Total thyroidectomy is the most recommended to avoid the risk of recurrence.

Histopathology analysis of operative specimens was performed in 80.76% (n = 24). We noted a predominance of Graves' disease 42.31% (n = 11) followed by dystrophy in 25% of cases (n = 6) Bullet et al [6] reported in the histological study of their parts, a clear inflammation of the thyroid parenchyma and the presence of very numerous lymphoid islands in the interstitial tissue From the point of view of postoperative development, we recorded the death of two patients:

One was a 24-year-old patient admitted to the ward with surgical hyperthyroidism associated with Graves' disease. Cervical compression and dysphonia were the main indications for surgery. After an opinion in the cardiology department, she was subjected to an anxiolytic and a beta-blocker.

The pre-anesthetic consultation performed recommended medication for two weeks before the operation. It was taken in the operating room at the end of the treatment instituted. She died on the operating table after anesthetic induction.

The other death was a 57-year-old patient admitted to the ward with toxic multi-nodular goiter that has been progressing for about 15 years. The operative indication was cervical compression with intermittent dysphagia for solids. The pre-anesthetic consultation carried out recommended taking an anxiolytic and an opinion to the ENT department; what was done. No damage to the recurrent nerve and vocal cords has been demonstrated. The patient was taken to the operating room after twelve days of treatment where a subtotal thyroidectomy was performed. The tumor was bleeding profusely and the patient died on the operating table from hemorrhagic shock. The 7.69% mortality in our study is lower than that of Bilosi et al [11] who reported zero mortality.

The compressive hematoma occurred in a 61-year-old patient with an adherent, hemorrhagic multi-nodular goiter who was complicated by postoperative cervical hematoma 2 hours after the block. This motivated his return to the OR where the hematoma was emptied and the hemostasis reinforced and the thyroid compartment was drained.

The hypophonic phonation disorder occurred 2 months after subtotal thyroidectomy in a 16-year-old patient; carrier of a Basedowian goiter. Medium and long-term postoperative follow-up was not possible due to the fact that the patients who were relieved by decompression did not keep any follow-up appointments.

Quéret et al. in 2015 on a sample of 200 patients operated on for hyperthyroidism, reported 4% laryngeal nerve palsy with aphonia-type phonation disorder. The patient was in ENT consultation where a recurrent nerve palsy was objectified and followed in this department for this purpose. Daali [4] and Biet [17] reported respectively 1.4% and 2.2% of transient recursive paralysis thyrotoxicosis syndrome classically described in Graves' disease is the most common etiology of surgical hyperthyroidism. Cardiothyreosis remains the most formidable and fatal complication.

The lack of certain means of exploration and the financial inaccessibility of hormonal assays limit diagnostic possibilities. The sequence of hormonal assays (TSH and FT4); thyroid ultrasound; ECG Could be an interesting alternative. Synthetic antithyroid drugs remain an essential therapy.

Drug supply problems, their high cost, the long duration of medical treatment lead to poor compliance.

A first-line medical treatment with synthetic antithyroid drugs, short enough to obtain euthyroidism, followed by thyroidectomy or nodule resection, depending on the case, would be a better proposal.

Most of the time, the evolution has been favorable; a postoperative therapeutic medical follow-up is necessary in order to detect a possible recurrence or a late complication of the surgery.

3. Conclusion

Hyperthyroidism results from disorders due to iodine deficiency, its surgical management is difficult in the Guinean context because of the low socioeconomic level of the population is a real public health phenomenon, Its prevention requires a large awareness campaign through areas affected by the disease.

Compliance with ethical standards

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Statement of informed consent

No conflict of interest.

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