ORIGINAL RESEARCH

Clinical features and Surgical Outcomes of Thyroid Goitre Presenting to Ear, Nose and Throat Department of Queen Elizabeth Central Hospital, Blantyre, Malawi

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Abstract

Introduction

In Malawi there is a perception that goitre is common and causes significant public health and economic burdens. The purpose of this study was to assess the demographic distribution, clinical presentation, investigations, management, outcomes and complications of goitre seen at Queen Elizabeth Central Hospital (QECH), Blantyre, Malawi.

Method

A single hospital-based descriptive retrospective study from January 2017 to December 2018 for all patients presenting with goitre.

Results

Out of 9073 patients who presented to ENT department, 105 patients presented with goitre representing 1% of all patients seen during the study period. The Male: Female ratio was 1:25. The mean symptom duration with goitre was 4 years (SD +/- 6.4). Thyroid function test results were available in 54 patients and out of these, 53(98%) patients were euthyroid. Ultrasound scan (USS) reports were available in 44 patients, of these 32(73%) were multinodular goitres. In 70 cases, pathology results were available and showed that 20% were thyroid cancers and that papillary thyroid carcinoma was the commonest cancer (64%).Two recurrent laryngeal nerve injuries were recorded in 79 surgical procedures representing 2.5% of patients (6.3% overall complication rate). Inpatient stay ranged from 2 days to 49 days (median 3 days).

Conclusion

Goitre at our centre is more common in women than in men. One in five patients in this cohort had thyroid cancers. This prevalence is higher than other areas in the world highlighting the need for cytology services on every patient before surgery and histology services after surgery. Recurrent laryngeal nerve injury and other complications were infrequent demonstrating local high safety of thyroid surgery, despite late presentation to the ENT department.

Key words: Goitre, thyroid gland, thyroid cancer, thyroid neoplasm, cytology.

Introduction

The thyroid gland and its diseases have been described in clinical practice since the time of Hippocrates[1]. A goitre is an abnormal enlargement of the thyroid gland that can develop from a variety of etiologies[2-4]. It is the most common swelling among endocrine disorders and can affect both children and adults[5, 6]. Many studies have identified differences in goitre prevalence that vary by socioeconomic and geographical factors, with iodine deficiency continuing to be the most common cause of goitre worldwide[4,7]. Other causes of benign goitre include an increase in serum thyroid-stimulating hormone (TSH) level, natural goitrogens like goitrins, thiocyanates and Flavonoids; smoking, and lack of selenium and iron[8,9]. Evidence suggests that family history and female gender are the strongest risk factors for goitre[10]. Additionally, 33% of the population will have thyroid nodules and95% of these will be benign and will not progress to malignant disease[11].

Thyroid cancers are rare and represent 1% of malignant tumors, 2.1 % of endocrine malignancies, and 1- 5% of thyroid tumors[12-14]. The suggested risk factors for thyroid cancer include female sex, white race, high-dose ionizing radiation exposure (in childhood), diabetes, and obesity[13,14]. In Africa, the rate of thyroid cancers is said to be lower than in most other parts of the world[15,16]. However, in the last three decades thyroid cancer incidence has increased. In the United States alone, the increase in cost for thyroid disease management is predicted to triple by 2030 and could reach the 3.5 billion dollar mark annually[15].Thyroid disease could largely be under diagnosed and underreported in Africa, and information on the patterns of chronic thyroid conditions and histological subtypes of thyroid cancer is scarce[15,16].

In Malawi, studies conducted on goitre previously focused on iodine supplementation[17-19]. Hence this paper aims to review the clinical presentation, management and outcomes of patients with goitre seen in the ENT department of QECH.

Methods

This is a single hospital-based descriptive retrospective case series. The study was done at QECH which is a 1000 bed hospital serving as a tertiary hospital for the Southern region of Malawi. The study covers the period from January 2017 to December 2018 and included all patients of any age. Patient charts, admission and theatre records books from the ENT department were used to collect data. Kamiza (Local private provider laboratory) and College of Medicine (Government) pathology laboratories provided data on cytology and histology results for 70 patients.

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Table 1: Age and Sex Distribution

Age group (years)	Sex		Frequency	Percentage
	Female	Male		
11-20	5	0	5	4.8
21-30	15	2	17	16.2
31-40	31	0	31	29.5
41-50	30	1	31	29.5
51-60	13	1	14	13.3
61-70	5	0	5	4.8
71 and above	2	0	2	1.9
Total	101	4	105	100.0

clinical presentation, duration of symptoms, clinical findings, ultrasound, Thyroid function test, cytology and histopathology, surgical procedure, complications, and duration of hospital stay (post-surgery).

Excel 2007 software was used for the collection of data and analysis was done using both Excel and SPSS version 20 software[20,21]. Continuous variables were shown as mean and median whilst for categorical variables the percentage and frequency were used. Tables and graphs were used to present data and results. Approval was obtained from the College of Medicine Research Ethics Committee in Malawi.

Results

A total of 9073 patients presented to our ENT department over the 2 study years. Of these, 182 patients presented with a thyroid mass but case files could only be retrieved for 105 patients who were finally included in the study representing a service cohort prevalence of at least 1.1% (Figure 1).

The age range was 13 to 72 years. The mean age was 40.8 years (SD -/+12.5) and the median was 40 years.

Four patients were male and 101 patients were female, representing a male to female sex ratio of 1:25. Approximately 60% of the patients were aged between 31 and 50 years.

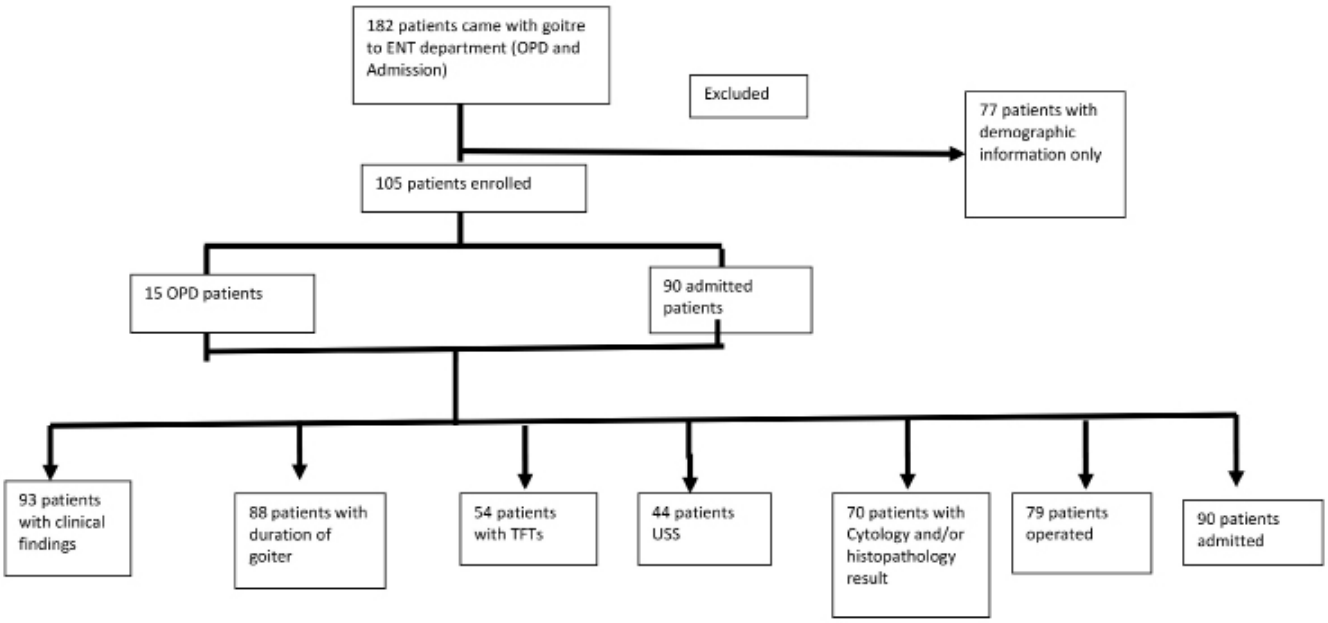

Figure 1: Flow Chart Showing Eligibility, Exclusion and Enrolment

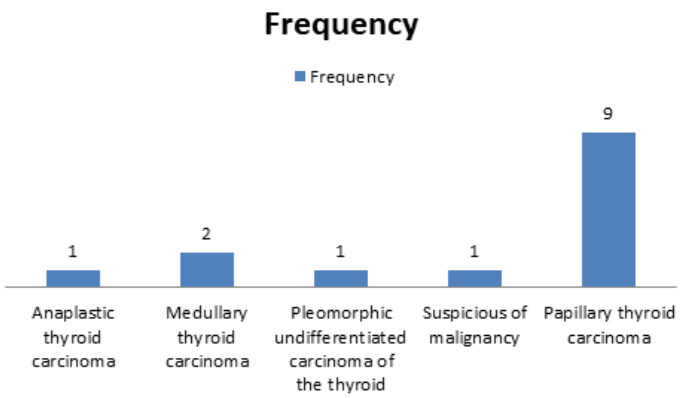

Figure 2: Types of Thyroid Cancers

Thyroid function test results could only be sourced from patient charts rather than verified by chemistry laboratory.

Variables analyzed included age, sex, address of patient, (Table 1)

A total of 105 patients (100%) had an anterior neck mass and out of these18 (17.14%) also had compressive symptoms. Eighty-eight patients (83.8%) had documentation on the duration of their thyroid mass. The mean duration of symptoms was found to be 4years (SD -/+6.4 years). Thyroid Function tests were recorded in 54 patients and 53(98.1%) were euthyroid (Table 3).Ultrasound reports were documented for 44 patients and 32(73%) of them showed multinodular goitre (Table 2).

Seventy patients out of 105 had their Fine Needle Aspiration (FNA) Cytology or histology results recorded. Benign thyroid mass represented 80 % of all tumours and malignant lesions represented 20% (Table 3).

Papillary thyroid carcinoma was the commonest type of cancer (9 patients) representing 64.29% of all cancers found (Table 4/ Figure 2).

A total of 79 thyroidectomies were carried out, and out of these the most common type of surgery was hemithyroidectomies (n=48 or 60.8%).

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Table 2: Clinical Characteristics

Variables	Categories	Frequency	Percentage
Duration	Less than 1 year	11	12.5
	1 to 5 years	40	45.5
	6 to 10 years	20	22.7
	11 to 15 years	6	6.8
	16 to 20 years	8	9.1
	21 years and above	3	3.4
	Total	88	100.0
Symptoms	Anterior neck mass alone	85	81.0
	Anterior neck mass plus signs of hyperthyroidism	2	1.9
	Anterior neck mass with compressive symptoms	18	17.1
	Total	105	100.0
Ultrasound	Multinodular	32	72.7
	Single nodular	7	15.9
	Suspicious of malignancy	5	11.4
	Total	44	100.0

Table 3: Outcome characteristics

Variables	Categories	Frequency	Percentage
Thyroid function test	Euthyroid	53	98.1
	Hypothyroid	1	1.9
	Hyperthyroid	0	0.0
	Total	54	100.0
Pathology	Benign	56	80.0
	Anaplastic thyroid carcinoma	1	20.0
	Medullary thyroid carcinoma	2	
	Pleomorphic undifferentiated thyroid carcinoma	1	
	Suspicious of malignancy		
	Papillary thyroid carcinoma	9	
	Total	70	100.0
Type of procedure	Hemithyroidectomy	48	60.8
	Total thyroidectomy	28	35.4
	Thyroidectomy +Selective Neck Dissection	3	3.8
	Total	79	100.0
Complication	Chyle leak	1	1.3
	Haematoma	1	1.3
	Seroma	1	1.3
	RLN Injury	2	2.5
	No complication	74	93.7
	Total	79	100.0

Table 4: Pathology results distribution

Result	Frequency			Percentage
	FNA	Histology	Total	
Benign	46	10	56	80.0
Pleomorphic undifferentiated Carcinoma of the Thyroid	1	0	1	1.4
Papillary Thyroid Carcinoma	5	4	9	12.9
Medullary Thyroid carcinoma	0	2	2	2.9
Anaplastic thyroid carcinoma	0	1	1	1.4
Suspicious of malignancy	1	0	1	1.4
Total	53	17	70	100.0

The majority (n=74 or 93.7%) of patients did not have any complications post-operation. The early complication rate was 6.3%, including hematoma, chyle leak, seroma, and recurrent laryngeal nerve injury, seen in 2 patients(2.5%). Patients with nerve injury both recovered and were asymptomatic after few weeks of surgery. The hospital stay ranged from 2 days to 49 days with a median of 3.0 days. (See Table 3)

Discussion

To our knowledge, this study exploring clinical features and surgical outcomes of patients with goitre is the first of its kind to be conducted in Malawi. Goitre represented 1.1% of all patients attending our service which is below the expected numbers given worldwide estimated population prevalence of 4 to 6%[22]. This low prevalence could be attributed to other patients with goitre reporting to other hospitals or remaining in the community, managing their symptoms without seeking care. Furthermore, this was not a population-based study seeking true prevalence.

The youngest age recorded was 13 years and the oldest was 72 years old (median 40 years),with the majority of patients aged 21 to 50 years. This is comparable to the study done by Sanjeeva KK, et al[1] which showed those in middle age were the most affected cohort.

It was observed that out of 105 patients only 4 were male which represents a male to a female sex ratio of 1:25. This is different from other studies such as Raheem et al and Chaudhary et al who found a sex ratio of 1:6 and 1:7.3 respectively[23,5]. In South Africa, Bhuiyan et al found a male to the female sex ratio of 1:17[24] The reasons for this high variation in sex distribution have not been established. In our series, there was the highest prevalence amongst females aged 21 to 50 years. Animal studies have shown that the testosterone decreases thyroid growth and serum-free T4 levels in iodine-

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deficient castrated rats, and this may account for lower incidences of goitre in men than post-pubertal women in iodine-deficient areas[25].

The duration from start of symptoms to presentation at the hospital ranged from 0 to 30 years, but the majority of patients77 (87.5%) presented with a history of an anterior neck mass for more than one year. The mean duration of a neck mass was 6.7 years (SD +/-6.44 years). Kenneth et al in Nigeria found that the duration of symptoms before presenting ranged from 1 month to 22 years (mean 4.2 years, SD +/-4.46 years)[26]. This implies that our patients stay at home longer before seeking medical assistance, which could be due to a lack of awareness in the population, or the limited number of ENT/ Head and Neck surgeons or general surgeons with confident knowledge and skills for thyroid surgery[27]. Training more ENT/Head and Neck surgeons and establishment of a highly trained team initially at the Central Hospitals and later at District Hospitals will improve access to thyroid services in Malawi.The majority of patients in our study were euthyroid. Altae et al in Iraq found that 93 out of 127 cases (73.2%) were euthyroid, 30 (24.4%) were hyperthyroid and 4 hypothyroid[29]. Unlike solitary nodules, multinodular goitre can harbour hyper, hypo and normally functioning lesions within the same gland, and thyroid fuctiontional status therefore varies[1].

Therefore, any patient with goitre should routinely undergo a thyroid function test to identify those with abnormal results and optimize them before surgery. Our study included younger patients and shows that 32 (73%) patients had multinodular goiter on ultrasound, which is different to the findings of Allen et al in children and adolescents with goitre in Virginia, USA. In their studyof 33 patients who underwent ultrasound, 7(21.2%) had multinodular goitre, 26(78.8) had a single nodule and 1 case was suspicious of malignancy8. The late presentations to hospital from our patients could have contributed to the ultrasound findings in our setting. Ultrasound scanning should be a routine on every patient with goitre because this can help identify lesions suspicious for malignancy before surgery and therefore help in surgery planning.

The majority of the procedures performed were hemithyroidectomies 48(61%). Those who underwent total thyroidectomy (35.4%) were put on Levothyroixine after surgery. These rates are similar to Hill et al, who found in a rural Hospital in Kenya that of 217 patients,122(56.2%) underwent subtotal thyroidectomies, 77(35.4%)lobectomies, and 15(6.9%) total thyroidectomies[30].When an indication for thyroidectomy is present, the surgical decision regarding initial operative extent is driven by multiple factors including symptoms, primary etiology, presence of contralateral nodular disease, thyroid functional status, comorbidities, family history, surgical risk, comparative outcomes, and patient preferences[30]. In many high-income settings such as UK, USA and Australia multi-disciplinary team meetings have become the mainstay of these complex decision-making processes[31]. In our context, these decisions are still largely made on single surgeon expertise. In our study, multinodular goitre was the commonest thyroid mass, and clinical and USS findings, plus patient choice and situation, dictated the extent of surgery. Total thyroidectomy was reserved for bilateral thyroidal nodules and thyroid cancer.

One of the early complications observed during the study period was Recurrent laryngeal Nerve (RLN) injury. These two patients (2.5%) had mild dysphonia which resolved after few days. The one patient who had a hematoma had this evacuated in theatre two days after surgery. Another patient with chyle leak after total thyroidectomy from papillary thyroid cancer, was managed conservatively. Of the patients who underwent total thyroidectomy at Shifa College of Medicine in Pakistan, S. Latif, H. Altaf et al reported a similar proportion of RLN injury 2(2.08%), both of whom had hoarseness of voice in the postoperative period which resolved in three months[32].

As a retrospective study there was incomplete documentation in some files of patients, and we had difficulties to access full information on thyroid function tests. The national use of a health passport (patient-held medical documentation, which patient retains and takes home) made longer follow up of all our patients impossible.

Conclusion

Goitre is more common in women than in men in our setting. In this study we found that one in five goitres were due to thyroid cancer. This prevalence highlights the need for cytology services on every patient before surgery and histology services after surgery. Recurrent laryngeal nerve injury and other complications were infrequent demonstrating local high safety of thyroid surgery, despite late presentation to the ENT department.

Multiple missing data in this case series highlights the need for centralised or electronic cytology and histology services to assist with decision making and national health surveillance for all patients requiring surgery in our setting.

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