

Goiters: A Ten – Year Experience in Developing Country

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Abstract- Background: Goiter is fairly a common disease in the tropics with endemicity in iodine – deficient regions and such goiters are usually multi nodular, colloid or hyperplastic. Other forms of goiters such as Grave’s disease, thyroid cancers, and inflammatory goiters are also seen though in lesser proportions. Open surgery is the mainstay in the treatment of goiters in developing countries. **Patients and Methods:** The study reviewed all goiter patients managed in UMTH between January 2004 and December 2013. Information was obtained from clinical and laboratory records and the data analyzed using SPSS Version 16. Patients with toxic goiter were rendered euthyroid with carbimazole and propranolol before surgery. All patients with resectable malignant goiter had total thyroidectomy with thyroxin replacement for life while in patients with non resectable tumours isthmusectomy to free the trachea, and thyroxin to suppressed thyroid stimulating hormone was done. **Results:** A total of 379 patients were analyzed. Age ranged from 16 – 76 years with a mean of 38.86years with a male to female ratio of 1: 6.29. The peak age group was 30 – 39 years accounting for 29.02%. The indications for surgery were cosmetic in 80.21%, and pressure symptoms in 73.09%. The histological diagnoses were colloid/hyperplastic (simple goiter) in 63.32%, and toxicity in 23.48%. The postoperative complications were transient hypocalcaemia in 6.60%, and respiratory obstruction in 9.76%. Mortality was 0.79%. **Conclusions:** The commonest goiter is colloid due to iodine deficiency, therefore iodized salt, sugar, and drinking water should be the basis for public health policy towards prevention.

Index Terms- Goiter, Types, Management outcome, Experience, Developing Country.

I. INTRODUCTION

Iodine is an essential trace element required for the normal thyroid hormone activity specifically thyroxin and triiodothyronine. Insufficient or excessive iodine intake can cause thyroid hormone disorders¹⁻⁴. Other thyroid disorders include autoimmune diseases of the thyroid, with Grave’s disease predominating, and rarely Hashimotor thyroiditis. Thyroid malignancies are fairly seen with follicular being the commonest. In Africa thyroid dysfunction has been described in association with tuberculosis⁷⁻⁸. In developed countries both benign and malignant goiters are treated by total thyroidectomy⁹⁻¹⁰ and thyroxin replacement for life. In Africa however thyroxin is not readily available and where available is expensive to be taken for life. In this context, benign all benign goiters are treated by subtotal or near total thyroidectomy conserving minimal thyroid tissue to sustain life. This study reviewed our experience in

goiter presentation, types, and outcome of management over a ten- year period.

II. PATIENTS AND METHODS

The study reviewed all goiter patients managed in the University of Maiduguri Teaching Hospital (UMTH) between January 2004 and December 2013. Permission for the study was granted by the hospital Ethics and Research Committee. Written informed consent was obtained from all patients. Information was obtained from clinical and laboratory records and the data analyzed using SPSS Version 16. The diagnosis of goiter was based on clinical evaluation supported by laboratory and imaging investigations where indicated. Investigations included urinalysis, blood chemistry, full blood count, thyroid function test, indirect laryngoscopy, soft tissue x-ray of the neck, and chest x-ray. Others were Electrocardiography, Fine needle aspiration cytology, and Ultrasound guided need Trucut biopsy where indicated. Patients with toxic goiter were rendered euthyroid on outpatient basis with carbimazole and propranolol before surgery. All patients had surgery under general anesthesia with endotracheal intubation and antibiotic prophylactic (ceftriaxone). Resected specimens sent for histology. All patients with resectable malignant goiters had total thyroidectomy with thyroxin replacement for life while in patients with non resectable tumours isthmusectomy to free the trachea, and thyroxin to suppressed thyroid stimulating hormone as palliative measures. Simple, benign toxic and selected inflammatory goiters had subtotal thyroidectomy. Those that require radiotherapy were referred. All patients were followed up.

III. RESULTS

A total of 392 patients were reviewed, 13 excluded for incomplete data and 379 analyzed. Age ranged from 16 – 76 years with a mean of 38.86years and SD of 12.74. Fifty- two were males and 327 were females with a male to female ratio of 1: 6.29, the peak age of 30 – 39 years accounting for 110(29.02%) **table 1**. The indications for surgery were cosmetics in 304(80.21%), pressure symptoms in 277(73.09%), toxicity in 83(21.90%), malignancy in 30(7.92%), and inflammatory in 23(6.07%). Subtotal thyroidectomy was done in 349 (92.08%). The histological diagnosis were colloid/hyperplastic (simple goiter) accounted for 240(63.32%) **table 2**. The postoperative complications were transient hypocalcaemia in 25 (6.60%), and respiratory obstruction in 37 (9.76%) comprising laryngeal edema in 29(7.65%), and hematoma in 8(2.11%). In 3(0.79%) hematoma had to be evacuated. Hypertrophic scar/keloid in

17(4.49%), and Mortality was 3(0.79%). The mean hospital stay was 5 days.

IV. DISCUSSION

Globally the indication for surgery in goiter varied from cosmetics, toxicity, pressure symptoms or malignancy¹¹⁻¹³. In this study the indications for surgery were similar with cosmetic, toxicity malignancy and pressure symptoms in 80.21%, 21.90%, and 73.09% respectively. The current study found the mean age of goiter patient was 38.86 years and SD of 12.74, female to male ratio of 6.29: 1. The goiter pattern was colloid/hyperplastic in 63.32%, toxic in 23.48%, adenomas in 3.43%, carcinoma in 7.92%, and thyroiditis in 1.85%. This when compared with a study by Dakubo et al¹⁴ that found mean age of 41.98years and SD of 12.90, and goiter pattern of hyperplastic, toxic, adenoma, carcinoma, and thyroiditis of 70.7%, 13.3%, 7.0%, 4.7%, and 4.4% respectively, contrasted sharply. This can be explained by early iodine supplementation program in Ghana. This can further be buttressed by a shift towards papillary carcinoma accounting for 56% in their series as opposed to 33.33% papillary carcinoma in this study. In the North Eastern region of Nigeria iodine supplementation started recently, thus follicular carcinoma predominated accounting for 43.33% of all the thyroid carcinoma. All benign goiter patients had subtotal thyroidectomy (92.08%) while malignant goiters were subjected to total thyroidectomy where possible. In their series 52.7% had subtotal thyroidectomy with 4.5% total thyroidectomy. The current practice in developed countries is total thyroidectomy for both benign and malignant conditions followed by thyroxin replacement for life¹⁵⁻¹⁶. The higher incidence of morbidity associated with total thyroidectomy due to extensive tissue dissection has made it unattractive in most centers in developing countries. In such centers facility for intensive care are not readily available. More so thyroxin replacement for life is not a viable option in poor socioeconomic countries. The postoperative complications in our series were limited to respiratory obstruction due to hematoma and laryngeal edema in 9.76%, transient hypocalcaemia in 6.6%, and the mortality was 0.79%, and mean hospital stay of 5 days. These were similar to findings by Bhattacharyya et al¹⁷ of hypocalcaemia in 6.2%, hematoma in 1%, mortality of 0.2%, and hospital stay 2.5 days.

V. CONCLUSION

Multi nodular colloid goiter is the commonest benign lesion of the thyroid gland due to iodine deficiency while follicular carcinoma is the commonest malignancy arising from multi nodular goiter. Autoimmune disorders of the thyroid also exist with Grave's disease predominating. Supplementary iodine nutrition as a public health policy will reduce the prevalence of multi nodular goiter and follicular carcinoma with subsequent shift towards the global trend of predominantly papillary carcinoma of the thyroid.

TABLES 1: Age distribution

Age years	N0	%
<20	18	4.75
20-29	106	27.97
30-39	110	29.02
40-49	76	20.05
50-59	44	11.61
60-69	15	3.96
70-79	10	2.64
Total	379	100.00

Table 2: Histological diagnosis

Diagnosis	No	%
Colloid/hyperplastic	240	63.32
Adenoma	13	3.43
Grave's disease	69	10.16
Nodular toxic	20	5.28
Follicular carcinoma	13	3.43
Papillary carcinoma	10	2.64
Mixed carcinoma	2	0.53
Medullary	3	0.79
Oncocytic cell carcinoma	1	0.26
Anaplastic carcinoma	1	0.26
Hashimoto thyroiditis	4	1.06
Other thyroiditis*	3	
	0.79	
Total	379	100.00

*NB Others thyroiditis were Riedle's, Sub-acute, and Lymphocytic 1(0.26%) each

REFERENCES

- [1] World Health Organization, United Nations Children's Fund, International Council for the Control of Iodine Deficiency Disorders (2007) Assessment of iodine deficiency disorders and monitoring their elimination: A guide for program managers. Geneva, Switzerland: World health organization
- [2] FAO/WHO (2005) Vitamin and mineral requirements in human nutrition, 2nd ed. Geneva: World Health Organization. Available: <http://whqlibdoc.who.int/publication/2004/9241546123.pdf>
- [3] Zimmermann MB (2009). Iodine deficiency. *Endocr rev* 2009; 30: 376-408 doi:10.1210/er.2009-0011
- [4] Ozpinar A., Kelestimur F., Songur Y., Can O., Valentin L., et al (2014) Iodine status in Tuerkish populations and exposure to iodine uptake inhibitors. *Plos One* 9: e88206.doi:10.1371/journal.pone.0088206
- [5] Ogbera A.O., Fasanmade O., Adediran O. Pattern of thyroid disorders in the South Western region of Nigeria. *Ehtn Dis* 2007; 17: 327-30
- [6] Nkanza N.K., Carcinoma of the thyroid at Harare histopathology laboratory (Zimbabwe). *The Central African Journal of Medicine* 1990; 36(2):34 – 43
- [7] Post F.A., Soule S.Q., Willcox P.A., Levitt N.S. The spectrum of endocrine dysfunction in active pulmonary tuberculosis. *Clin Endocrinolol (oxf)* 1994; 40:367-71
- [8] Borggreve H.F., Kiers A., de Heide I.J. A Somali man with a painful thyroid mass: Thyroid tuberculosis. *Ned Tijdschr Geneesk* 2005; 149: 1954-7
- [9] Krzysztof K., Wojciech J., Jerzy K., Jeanna K., Lech P. Total thyroidectomy for Nodular, Benign Thyroid Diseases in Terms of Larynx function Examinations – Is it a New Treatment standard? *Polish Journal of Surgery* 2010; 82(1):4-11

- [10] Perzik S. L. Total thyroidectomy: Indications, Complications, and sequelae. *The American Journal of Surgery* 1963; 106 (5):744-747
- [11] Fradeep P.V., Raqavan M., Ramkrishna B.A., Jayasree B., Skandha S. H. Surgery in Hashimotos thyroiditis: Indications, complications , and associated cancers. *Journal of Post Graduate Medicine* 2011; 57 (2): 120-122
- [12] Mittendorf E.A., McHenry C.R. Thyroidectomy for selected patients with thyrotoxicosis *Arch Otolaryngol Head Neck Surg.*2001; 127 (1):61-5
- [13] Antonio R.Z., Jose R., Juan R., Teresa S., Manuel C., Pascual P. Prospective study of postoperative complications after total thyroidectomy for multi nodular goiters by surgeons with experience in endocrine surgery. *Ann Surg* 2004; 240(1): 18-25
- [14] Dakubo J.C., Naaeder S. B., Tettey Y., Gyasi R.K. Pathology and the surgical management of goiter in an endemic area, Initiating supplementary iodine nutrition. *West Afr J Med* 2013; 32(1):45-51
- [15] Muller P.E., Kabus S., Robens E., Spelsberg F. Indications , Risk, and acceptance of total thyroidectomy for multi nodular benign goiter. *Surg Today* 2001; 31(11): 958-62
- [16] Fang J.G., Ma H.Z., Zhang Z.B., Huang Z.G., Chen X.H., Zhou W.G., Chen X.J., Han D.M. Total thyroidectomy: Indications and complications. *Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi.*2010; 45(11):904-7
- [17] Bhattacharyya N., Fried M.P. Assessment of the morbidity and complications of total thyroidectomy. *Arch Otolaryngol Head Neck Surg* 2002; 128 (4):389-92

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