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Original research article

Cross-sectional study to evaluate the thyroid status among multinodular goitre patients admitted to tertiary hospital

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Abstract

Background & Objective: An enlarged thyroid gland is referred to as a goitre in general. When the thyroid gland has multiple distinct lumps (nodules), the condition is known as multinodular goitre. The main objective of this study is to evaluate the thyroid status among multinodular goitre patients.

Methods: This was an Observational study carried out at Tertiary care hospital and Medical College, Telangana, India from a period of 2019-2021. Total of 50 cases were enrolled in the study among which 45 were females and 5 were males.

Results: Fifty patients of MNG were evaluated with respect to age, sex, duration of swelling and were investigated with FNAC. Operated specimen subjected to histopathological examination and results were analyzed. MNG is the commonest thyroid disease in our hospital. Multinodular goiter is more common in females (Female to male ratio 9:1) majority are in the age group of 21-40 years (68%). The chief complaint in majority of the patients is swelling in front of the neck and few patients with pressure symptoms. 16% Hypothyroid, 4% hyperthyroid and 80% euthyroid. 2% no pain and 98% pain found in duration of swelling.

Conclusion: FNAC is very useful in the diagnosis and management of MNG. Malignancy can still come as a surprise on post-operative histopathological examination, even when there is no suspicion of malignancy clinically and with FNAC.

Keywords: Multinodular, goitre, malignancy, MNG

Introduction

The thyroid gland is an endocrine gland situated in the lower part of front and the sides of the neck. Its main function is regulation of the basal metabolic rate, stimulates somatic and psychic growth and plays important role in calcium metabolism. The term thyroid is derived from Greek, which means shield (Thyros-shield, eidos-form) [1-2].

Normal thyroid gland is impalpable. Enlargement of the thyroid gland is the most common manifestation of the thyroid disease. The enlargement may be either generalized or localized, which again may be, toxic or nontoxic. The nontoxic goitre is further divided on etiological basis as endemic goitre and sporadic goitre. The endemic goitre is defined as one where more than 10% of population shows thyroid enlargement [3-6]. Diseases of thyroid gland especially multinodular goitre due to deficiency of iodine are prevalent in India.

Lesions of thyroid are predominantly confined to females in the ratio of 5:1 and this has been attributed to variations of thyroid hormone during female reproductive function and physiological events such as puberty, pregnancy and lactation [7, 8]. Incidence of nodular goiter increases with increasing age. MNG can become malignant but is rare.

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Material and Methods

This was a Observational study carried out at Tertiary care hospital and Medical College, Telangana, India from a period of 2019-2021. Total of 50 cases were enrolled in the study among which 45 were females and 5 were males.

Inclusion Criteria

Only those patients with clinical evidence of multinodular goiter were taken up for the study randomly.

Exclusion Criteria

Patients with malignancy have not been taken into consideration into the study.

Method of study

The present study has been conducted by utilizing the cases diagnosed clinically as MNG and treated on inpatient basis in the department of General Surgery . All patients who were clinically diagnosed as MNG over a period of 2 years from January 2020 to December 2021 were selected. It is an observational study of all the cases clinically diagnosed as MNG during above mentioned study period.

The patients were selected according to the inclusion and exclusion criteria as mentioned below. All these cases were studied in detail, clinically and recorded as per the proforma. The relevant investigations whenever indicated were performed.

The investigations included Hemoglobin percentage, urine analysis, blood sugar estimation, blood urea estimation, blood grouping and Rh typing, serum cholesterol, x-ray of the neck-AP and lateral views and chest X-ray and ENT examination. All patients were investigated for Thyroid profile before surgery and submitted for FNAC of the thyroid swelling. All patients underwent surgery and all the excised thyroid specimen were sent for Histopathological examination.

Patients were discharged after removing the sutures and were asked to come for follow up. They were advised to take the needful medications after surgery.

Original WHO Goitre Classification System

Stage 0	No palpable or visible goiter, even with the neck extended
Stage 1	Subjects with a palpable goiter
Stage 1A	Goitre detected only by palpation
Stage 1B	Goitre palpable and visible with the neck fully extended
Stage 2	Goitre visible with the neck in the normal position
Stage 3	Very large goiter visible from a considerable distance

Simplified WHO Goitre Classification System

Grade 0	No palpable or visible goiter.
Grade 1	A mass in the neck is consistent with an enlarged thyroid that is palpable but not visible when the neck is in the neutral position; it also moves upward in the neck as the subject swallows.
Grade 2	A swelling in the neck that is visible when the neck is in normal position and is consistent with an enlarged thyroid when the neck is palpated.

Results

Table 1: Age and Sex distribution

Age in Years	Male	Female	Total	Percentage
01 – 10	00	00	00	00%
11 – 20	00	05	05	10%
21 – 30	02	20	22	44%
31 – 40	02	10	12	24%
41 – 50	01	05	06	12%
51 & above	00	05	05	10%
Total	05	45	50	100%

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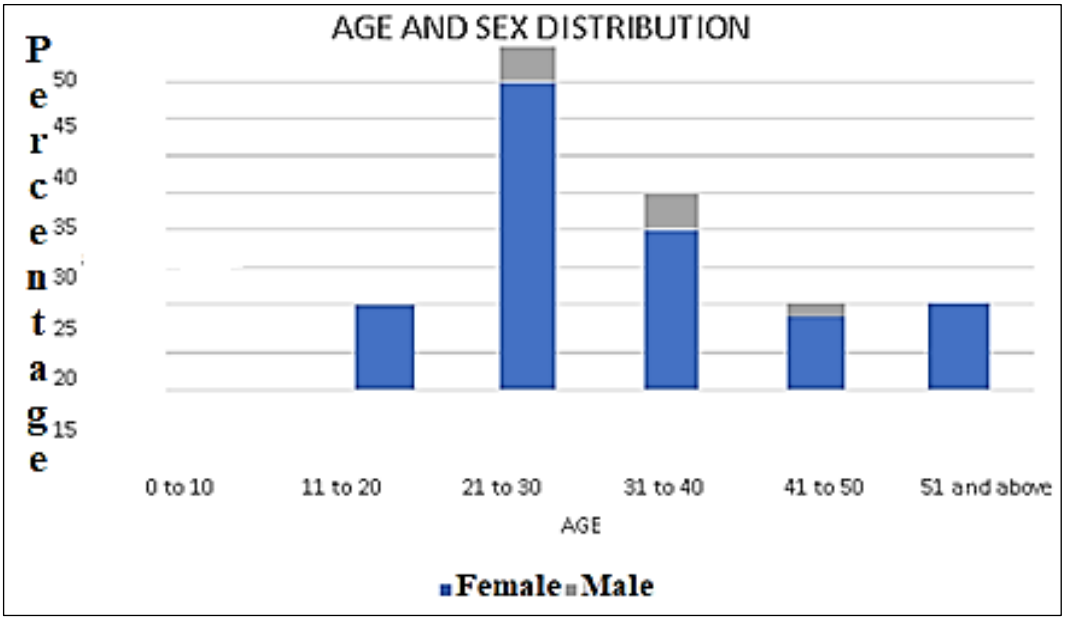

Chart No 1: Age and Sex Distribution

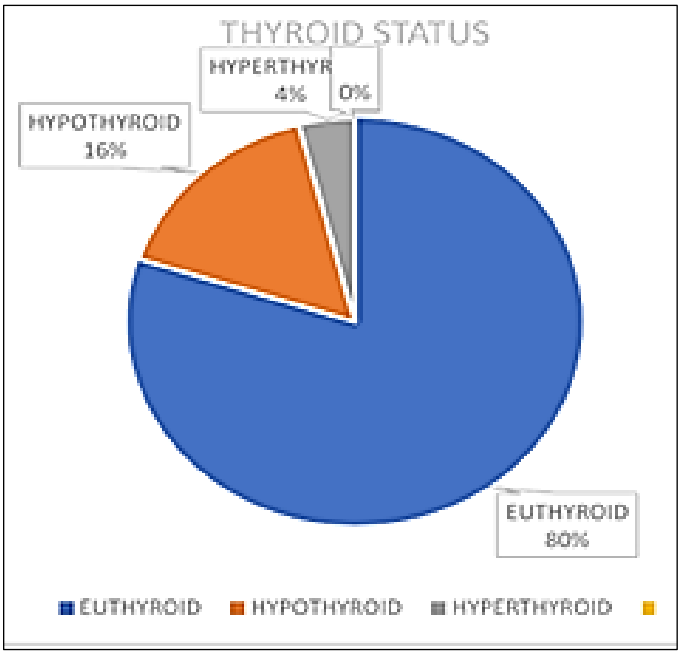

Chart No 2: Thyroid Status Among Multinodular Goitre Patients

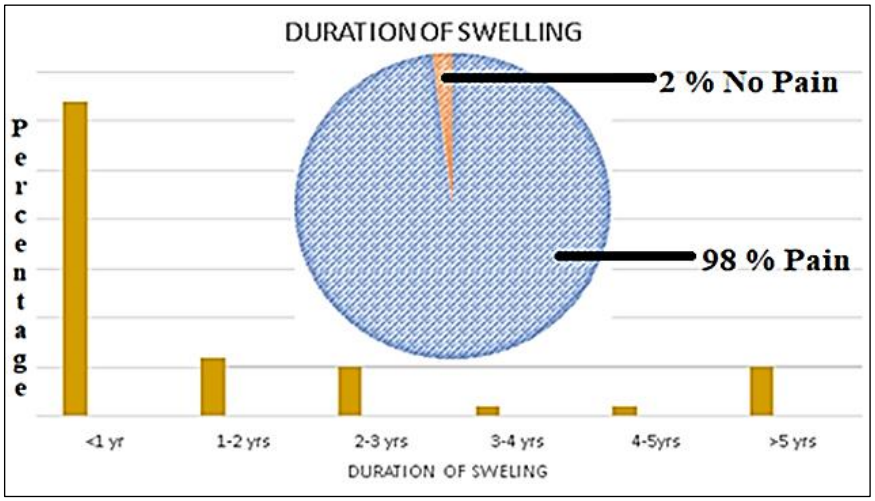

Chart No 3: Duration of swelling

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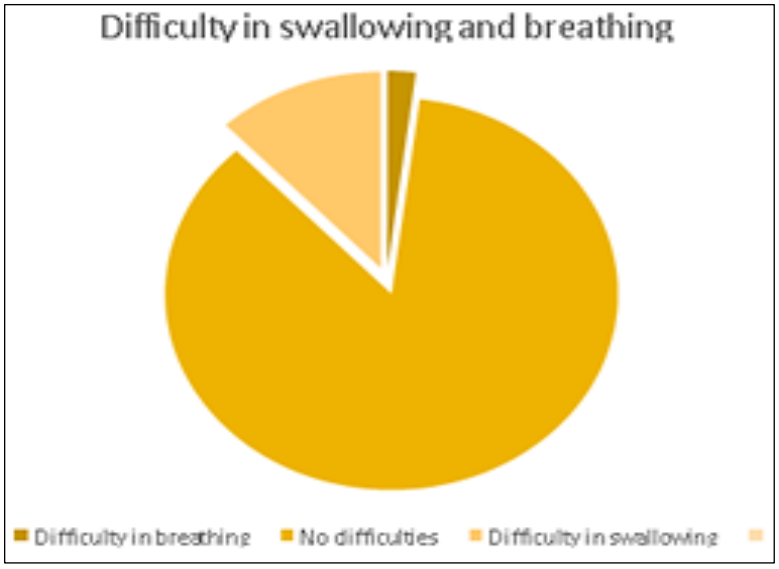

Chart No 4: Difficulty in swallowing and breathing

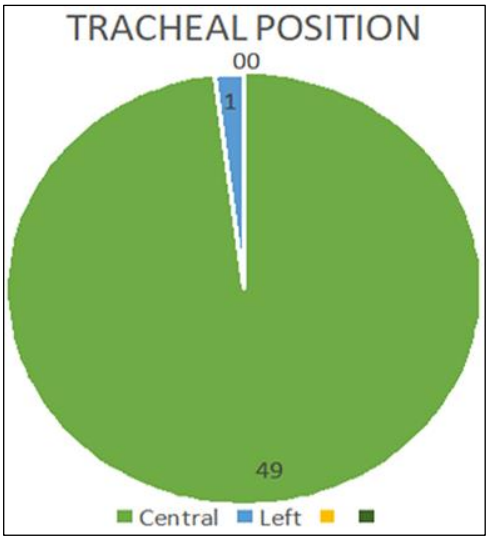

Chart No 5: Tracheal Position

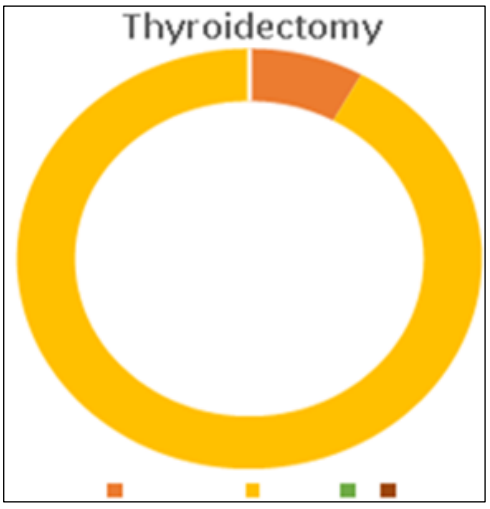

Chart No 6: Thyroidectomy

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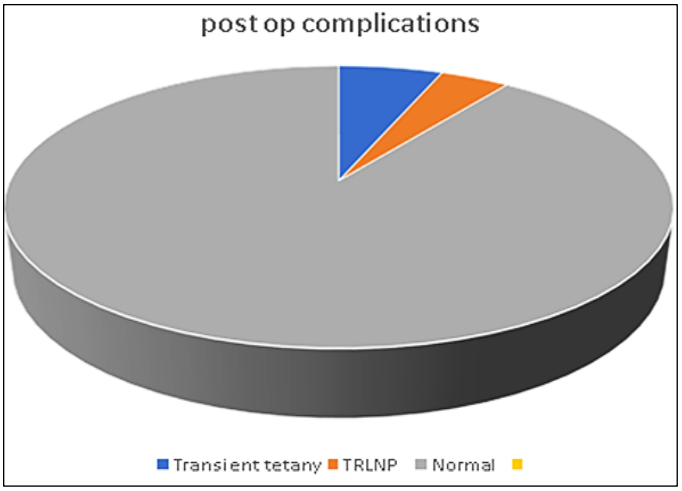

Chart No 7: Post Operation Complications

Discussion

Fifty patients presenting with Multi-nodularity of the thyroid gland without obvious evidence of malignancy were studied and evaluated in terms of history, clinical examination and subjected for relevant investigations, taken up for surgery with prior FNAC and histopathology of operated specimen done post operatively. The results were analyzed as depicted through table and charts. Of the fifty cases studied, 5 were males (10%) and 45 were females (90%) with a female to male ratio of 9:1. Antonio Rios *et al*., (2005) showed that 90% were females [9]. In the study conducted in Chan *et al*., [10] female to male ratio was 7:1.

Age and sex distribution of the patients are as follows, out of 50 patients, 5 of them are males. Whereas among females 40% presented in the age group of 21-30 and 20% presented in the age group of 31-40 years. Majority of the females 60%, (30 cases) presented in the age group between 21-40 years.

But in the western literature quoted by "Bremer and Moll Night" in analysis of 1280 cases of Multinodular goiter, the age incidence was maximum between 40-49 years. Hence the average age incidence in our study is low compared to western series which was found to be 33.22 years. Toxic symptoms and signs were seen in 4 cases (8%), 16 cases (32%) were found to be hypothyroid and the remaining cases 30 (60%) were found to have no symptoms.

The Chief complaint in our patients (100%) was swelling in front of the neck. However, few patients had associated local symptoms like difficulty in swallowing and/or breathing. Duration of swelling ranged from 20 days to 15 years and 90% (45 cases) were seen in the range of 1 month to 5 years.

Most of the swellings-48 cases (96%) were not associated with pain and only 2 cases (4%) had pain.

Pressure symptoms were seen in 14% (7 cases) as against 29% in Antonio rios *et al*., (2005) study [9]. In our study 6 cases (12%) presented with difficulty in swallowing and 1 case (2%) with difficulty in breathing. Thus, difficulty in swallowing was the commonest pressure symptom.

All thyroid swellings in our study were moving with deglutition. Both lobes were involved in 37 cases with predominantly involving right lobe and remaining 13 cases involving predominantly left lobe.

There was no case of retrosternal extension of goitre. X-ray of neck, AP and lateral views and X-ray of the chest were done in all the cases. There was one case of tracheal shift to left side due to a goiter, mainly involving right lobe of the thyroid.

FNAC for all the cases have been done and only non-malignant cases have been selected for the study.

The main indication for surgery in our series was cosmetic problem. The next common indication was for pressure effects of the goiter like dysphagia and dyspnea.

Of the 50 cases, 46 cases were subjected to total thyroidectomy and remaining 4 cases underwent subtotal thyroidectomy.

Transient hypoparathyroidism was seen in 3 patients (6%) which was observed during the first post-operative week and all recovered completely with oral calcium and I.V. calcium therapy. There was no permanent hypoparathyroidism. Cornett *et al*., (2007) [11] shows that there was 28% of temporary hypocalcemia and 0.9% with permanent hypocalcemia.

Conclusions

FNAC is very useful in the diagnosis and management of MNG. Malignancy can still come as a surprise on post-operative histopathological examination, even when there is no suspicion of malignancy clinically and with FNAC. The main indications of surgery in MNG are cosmetic problem, pressure effect symptoms, secondary thyrotoxicosis and suspicion of malignancy. Subtotal thyroidectomy is the surgery of choice for MNG. But a trend towards total thyroidectomy is replacing subtotal thyroidectomy in the management of MNG as recurrence of goiter is avoided and second thyroid surgery is difficult and

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associated with high risk of complications.

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Conflict of Interest: None.

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