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A CLINICOPATHOLOGICAL STUDY OF MULTINODULAR GOITRE IN A TERTIARY CARE CENTRE

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ABSTRACT

Background: Multinodular goitre (MNG) is a clinicopathological entity characterized by an increased volume of the thyroid gland with formation of nodules. The aim of study is to study the clinical presentations, surgical management and its outcome.

Methods: The present study was a hospital-based prospective study conducted in Gauhati Medical College and Hospital between July 2017 to June 2018. Clinically diagnosed as multinodular goitre were included.

Results: FNAC finding of multinodular goitre in the study group showed colloid goitre in 42 cases, 5 cases had papillary carcinoma, 3 cases of cystic lesion, 2 cases of Hashimoto's thyroiditis and a case each of haemorrhagic nodule, follicular neoplasm and hurthle cell adenoma. HPE finding wise distribution showed that 6 cases were malignant, and 49 cases were benign.

Conclusions: Females are predominantly affected. About 10.91% cases of MNG are malignant.

KEYWORDS

FNAC, Goitre, Multinodular

INTRODUCTION:

Thyroid gland is an endocrine gland situated in the anterior side of the neck. Its main function is regulation of the basal metabolic rate, stimulates somatic and psychic growth, and plays an important role in calcium metabolism. A goitre simply means an enlarged thyroid. Multinodular goitre (MNG) is a clinicopathological entity characterized by an increased volume of the thyroid gland with formation of nodules. The nodules can be very small, often only a few millimetres in size, or can be larger, perhaps several centimetres each.[1] Histologically, MNG is defined as a thyroid enlargement with follicles that are morphologically and functionally grossly altered. It usually develops over years.[2] The etiopathogenesis of MNG is not very clear. A mild dietary deficiency of iodine, slight impairment of hormone synthesis, increased iodide clearance from the kidneys, and the presence of thyroid-stimulating immunoglobulins have been suggested as the various causes.[3] 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. Multinodular non-toxic goitre is the most prevalent thyroid pathology characterized by unilateral or bilateral thyroid growth with morphologically and/or functionally transformed follicles and euthyroidism. Thyroid nodules have been reported to be found in 4-7% of the population on neck palpation and in 30-50% of the population by ultrasonography (USG).[4-6] The incidence of carcinoma in MNG has been reported as 5-10%. Therefore, fine-needle aspiration cytology (FNAC) for diagnosis and resection for suspicious lesions should be considered. Hyperthyroidism may be adequately controlled by drugs, but surgical management is the preferred treatment. Subtotal or total thyroidectomy may perform depending on the involvement of the thyroid gland. Radioactive iodine therapy is reserved for elderly individuals who represent a poor operative risk. The complications of thyroid surgeries are hemorrhage, respiratory obstruction, vocal cord paralysis, hypoparathyroidism, thyroid insufficiency, thyrotoxic storm, and wound infection.

Aims and Objectives:

1. To study the incidence and clinical presentation of multi nodular goitre.
2. To study the management and outcome of multi nodular goitre.
3. To correlate cytological and histopathological finding in diagnosis of multinodular goitre.

Materials and Methods:

The present study was a hospital-based study to study the various clinical presentations and the pathological features of multinodular goitre with respect to their histopathological reports. The study conducted at the Gauhati Medical College & Hospital between July 2017 to June 2018. The present study was a hospital-based prospective study.

Study population:

All eligible cases, after considering the inclusion and exclusion criteria, attending OPD of ENT and admitted to the ENT wards in Gauhati Medical College & Hospital for the treatment of multinodular goitre during the period of study were included. The sample size was 55 cases. All patients fulfilling the inclusion and exclusion criteria were enrolled in the study. A detailed history, clinical examination was done.

Inclusion criteria:

- All patients attending ENT OPD clinically diagnosed as multinodular goitre
- Age Group: 15 to 75 years
- Both genders

Exclusion criteria:

- Pregnant and lactating women
- Patients presenting with solitary thyroid nodule
- Patients less than 15 years of age and more than 75 years of age
- Patients not willing to take part in the study

The patients diagnosed as a case of MNG will undergo detailed history taking, clinical examination, investigations such as complete blood count, thyroid profile, FNAC, USG of neck, X-ray chest and neck. CT scan was done in some selected patients. After surgery, the patients were followed up for any immediate postoperative complications. The specimen was sent for histopathological examination (HPE) and the results were recorded. Patients were discharged after 1 week if there is no post-operative complications.

Results:

Table-1: Distribution of patients according to their age

Age Group(yrs)	No of Patients	Percentage
<21	1	1.8%
21-30	10	18.2%
31-40	25	45.5%
41-50	15	27.3%
51-60	2	3.6%
>60	2	3.6%
Total	55	100%

Table-1 shows that out of 55 cases studied, age incidence ranged from 18 to 75 years and most common age group having MNG was 31-40 years. The next common age group affected was 41-50 years age.

Table-2: Age distribution of patients having benign and malignant lesions

Age group(yrs)	Benign		Malignant	
	No of patients	Percentage	No of patients	Percentage
<21	1	2.04%	Nil	Nil

21-30	7	14.29%	3	50%
31-40	24	48.98%	1	16.66%
41-50	13	26.53%	2	33.33%
51-60	2	4.08%	Nil	Nil
>60	2	4.08%	Nil	Nil
Total	49	100%	06	100%

In Table-2 the most common age group affected by benign lesions was 31-40 years. The most common age group affected by thyroid malignancy was 21-30 years and next common age group affected was 41-50 years.

Table-3: Distribution of patients according to sex

Sex	No of patients	Percentage
Male	10	18.2%
Female	45	81.8%
Total	55	100%

Table-3 shows that MNG was more common in females as compared with males. MNG were seen in females 81.8% and males 18.2% (ratio= 4.5:1). Of the 45 female patients with MNG, 5 harboured malignancy and in 10 male patients with MNG, 1 had malignancy.

Table-4: Duration of symptoms before seeking medical attention

Duration	No of patients	Percentage (%)
<2months	3	5.45%
2 months-6 months	5	9.09%
6 months-1 year	7	12.73%
1 yr- 2 yrs	11	20%
2 yrs- 5 yrs	15	27.27%
5 yrs- 10 yrs	6	10.91%
10 yrs- 20 yrs	7	12.73%
>20 yrs	1	1.82%
Total	55	100%

Table-5: Distribution of patients according to symptoms

Symptom	No. of Patients	Percentage (%)
Swelling	55	100%
Pain/ discomfort	9	16.36%
Dysphagia	4	7.27%
Difficulty in breathing	0	00%
Change of voice	1	1.82%
Toxic symptoms	10	18.18%
Hypothyroid symptoms	3	5.45%

Table-5 shows that all the patients presented with thyroid swelling of which 18.18% had toxic symptoms and 16.36% of the patients complained of pain or discomfort in the neck. None of the patients complained of difficulty in breathing.

Table-6: The result of the fine needle aspiration cytology

Diagnosis	No. of patients	Percentage (%)
Benign	49	89.09%
Malignant	5	9.09%
Suspicious	1	1.82%

Table-6 shows that 49 of the thyroid lesions were diagnosed as benign by FNAC and 5 cases were diagnosed as malignant. All of malignant lesions were papillary carcinoma. One case was diagnosed with follicular neoplasm and was marked as suspicious lesion.

Table-7: Various diagnosis made by FNAC

Diagnosis	No. of Cases	Percentage
Colloid nodular goitre	42	76.36%
haemorrhagic nodule	1	1.82%
Cystic lesion	3	5.45%
Papillary carcinoma	5	9.09%
Follicular neoplasm (suspicious)	1	1.82%
Hashimoto's thyroiditis	2	3.64%
Hurthle cell adenoma	1	1.82%

Table-7 shows that colloid nodular goitre was the most common diagnosis made by FNAC (76.36%). Papillary carcinoma (9.09%) was the next common diagnosis. There were 3 cases of cystic lesion, 2 cases of Hashimoto's thyroiditis and a case each of haemorrhagic nodule, follicular neoplasm and hurthle cell adenoma.

Table-8: Histopathologic Diagnosis Of The Surgically Excised Specimen

Diagnosis	Number	Percentage
Benign	49	89.09%
Malignant	6	10.91%

Table-8 shows that 49 out of 55 patients studied were diagnosed to have benign lesion and 6 patients had malignancy.

Table-9: Histopathology of the various benign lesions

Diagnosis	No.of cases	Percentage
MNG	46	93.88%
Hashimoto's thyroiditis	2	4.08%
Hyperplastic nodule	1	2.04%
Total	49	100%

MNG was the commonest diagnosis histopathologically among benign disease followed by Hashimoto's thyroiditis and hyperplastic nodule.

Image-1: Preoperative Image Of Multinodular Goitre

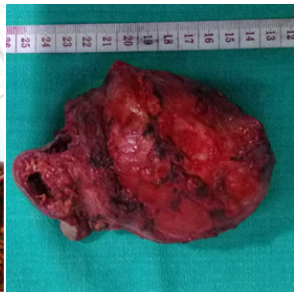

Image-2: Postoperative Image Of MNG

DISCUSSION:

In the present study, the maximum age recorded was 75 years and a minimum of 19 years, out of 55 cases, 25 belong to age group 31-40 years (45.5%). Maximum distribution was observed in 3rd and 4th decade. In the study conducted by Ahuja[7] majority of cases belong to the 3rd and 4th decades, least was in the 7th decade. Kapoor MM[8] reported that out of 226 cases, majority 145 (64%) cases were in the age group of 21- 40 years with maximum distribution in the third decade and least in the 7th decade, 12 cases (5.3%).

Among 55 cases of multinodular goitre, 10 were males and 45 were females with a sex ratio of female to male is 4.5:1. Study by Antonio Alfonso[9] showed a female to male ratio of 7:1. In the study conducted by Ahuja, out of 205 cases, 160 (78.1%) were females and 45 (21.9%) were males with a sex ratio of 3.5:1.

Eleven (11) cases with multinodular goitre were suffering from 1 to 2 yrs, 11 cases were suffering since 2 to 5 yrs. Sanjeeva K et al, studied the age and sex distribution along with the mode of presentation of Multinodular Goitre (MNG). 100 cases were enrolled and epidemiological finding were 59% patients with multinodular goitre belonged to 3rd and 4th decade of life, 82% presented before 5yrs. These findings are similar to our study finding.[10]

FNAC finding of multinodular goitre in the study group showed colloid goitre was seen in 42 cases, Papillary carcinoma (5 cases), cystic lesion (3 cases), Hashimoto's thyroiditis (2 cases) and 1 case each of haemorrhagic nodule, follicular neoplasm and hurthle cell adenoma. Amudhan J et al, studied the clinicopathological features of MNG and its management and its various post-operative complications. Total 50 cases enrolled in the study and post operation FNAC report showed that 64% of the cases had colloid nodular goitre, 22% had Hashimoto's thyroiditis, 8% had adenomatous goitre, 4% had follicular neoplasm and one case was non-conclusive.[3]

Malignant finding on FNAC was seen among 6 cases and 49 cases were benign in the study group. Padmawar MR et al, studied the clinicopathological study of multinodular goitre. All the 57 studied subjects underwent FNAC, out of which 51 cases (89.47%) turned out to be benign and 6 cases (10.52%) were malignant.[11]

All (55) the patient presented with thyroid swelling of which

18.18% had toxic symptoms and 16.36% of the patients complained of pain or discomfort in the neck. Study by Hee-Nee Pang and Chung-Ming Chen showed that most of the MNG were asymptomatic. Painful nodules 6.7%, 6.0% hoarseness of voice and another 6.0% gave a history of dysphagia.[12]

HPE finding wise observation showed that among 55 cases with multinodular goitre, 46 cases had multinodular goitre, 5 cases had papillary carcinoma, 2 cases had hashimoto's thyroiditis, 1 case follicular carcinoma and 1 case hyperplastic nodule. Sanjeeva K et al, studied the age and sex distribution along with the mode of presentation of Multinodular Goitre (MNG). 100 cases were enrolled and histopathological finding showed that 77 cases had multinodular goitre, 14 cases had Hashimoto's thyroiditis, 6 cases had follicular adenoma, 2 cases had papillary carcinoma and one case had follicular carcinoma.[10]

CONCLUSION:

Multinodular goitres are most common in 3rd and 4th decade of life. Females are predominantly affected. About 10.91% cases of multinodular goitre are malignant. Clinical examination is not accurate in detecting the malignant or benign lesion. All cases of multinodular goiter should be taken for surgery with sincere follow up of post op HPE report as histopathology report is gold standard test to confirm malignancy in multinodular goiter. Considering the histopathological report as a gold standard, correlation of FNAC finding with histopathological finding was very much accurate for detecting malignant and benign lesion of multinodular thyroid.

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