



A CLINICAL STUDY OF SOLITARY NODULE OF THYROID

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ABSTRACT **AIMS AND OBJECTIVES:** To determine the incidence of solitary nodule of thyroid in relation to age, sex, functional status and its complications.

MATERIALS AND METHODS: This is a prospective analysis of 50 cases of solitary nodule of thyroid admitted in department of general surgery, Kurnool medical college, Kurnool during June 2017 to June 2019 which were confirmed by thyroid profile, ultrasonography of neck and fine needle aspiration cytology.

RESULTS: In our study, the mean age of presentation is 37.24 years with female to male ratio of 9:1. 92% patients were in euthyroid state at the time of presentation. FNAC reported 64% of cases as benign finding with most common aetiology being dominant nodule of multinodular goitre (36%).

CONCLUSIONS: Solitary nodule of thyroid is more common in females in the age group of 3rd to 5th decade. The most common presentation being swelling in front of the neck. Most of the patients are in euthyroid state. Common causes of solitary nodule of thyroid are MNG (36%), follicular adenoma (24%). The most common malignancy in solitary nodule of thyroid is papillary carcinoma (67%), followed by follicular carcinoma (33%). The incidence of carcinoma in males presenting as thyroid nodule is higher (25%) compared to that of females (10.87%).

KEYWORDS : Solitary Nodule Of Thyroid, Thyroid Profile, Ultrasonography, Fine Needle Aspiration Cytology.

INTRODUCTION

Thyroid nodules are very common entities, though varying in incidence in different geographical regions (1). The prevalence of palpable nodules in the general population is 4-7%. Solitary nodule of the thyroid is about four times more common in women than in men. The overall incidence of malignancy in solitary thyroid nodule ranges from 10-30% (2). A solitary nodule is defined as "a single palpable clinically detected nodule in an otherwise normal thyroid gland" (3). Visibility or palpability of opposite thyroid lobe precludes inclusion of such cases in this group.

AIMS AND OBJECTIVES

1. To determine the incidence of solitary nodule of thyroid in relation to age and sex.
2. To determine the incidence of a solitary nodule of thyroid turning out to be a multi nodular goitre.
3. To study the incidences of euthyroid, hyperthyroid or hypothyroid states in patients presenting with a solitary nodule of the thyroid.
4. To study the role of FNAC in the management of solitary nodule of the thyroid.
5. To determine the incidence of adenoma, carcinoma and thyroiditis as a cause of solitary nodule of thyroid in Kurnool Medical College, Kurnool.

MATERIALS AND METHODS

It is a prospective analysis of 50 cases of solitary nodule of thyroid admitted and managed in the Department of General Surgery, Kurnool Medical College, Kurnool from June 2017 to June 2019. These cases were selected by random sampling method. Routine investigations and specific investigations including Thyroid profile, Indirect laryngoscopy, Plain X-ray neck, USG neck, FNAC of the nodule was done in all cases. Special investigations like radio-isotope scanning were not performed as the facilities were not available. All the patients were managed by surgery and diagnosis was confirmed by histopathological examination. The patients were grouped according to different variables like age, sex, size of the nodule, site of the nodule, functional thyroid status, FNAC report and histo-pathological examination reports then analysed and compared with the previous similar studies conducted elsewhere. Finally, conclusions were drawn

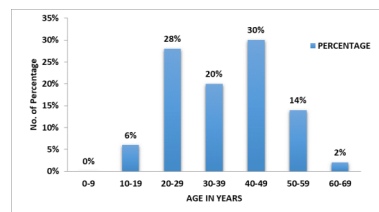
accordingly.

RESULTS

Total of 50 cases of a solitary nodule of thyroid studied and following results were drawn:

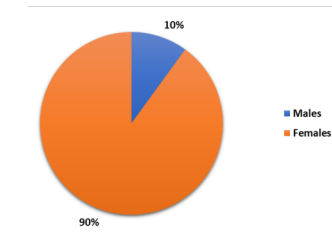
AGE INCIDENCE:

The age of the patients ranges from 15 years to 70 years, with peaks being in 3rd to 5th decades. The mean age of presentation is 37.24 years. Cases in 3rd to 5th decades constitute 60% of the cases studied.



SEX INCIDENCE:

Solitary nodule of the thyroid is more common in females. Out of 50 cases studied 45 were females and 5 were males, and the ratio comes to be M: F = 1:9.



CLINICAL FEATURES:

All the cases presented with the complaint of swelling in front of neck. Only a few patients presented with pain, discomfort and dysphagia. Out of 50 cases, 4 cases had pain, 2 cases had discomfort and another 2 had dysphagia. Also, none of the patients had lymphadenopathy

which was confirmed by ultra-sonography. Two patients had symptoms of thyrotoxicosis, and two had features of hypothyroidism which were confirmed by thyroid profile.

DURATION OF SYMPTOMS:

In our study, the duration of onset of symptoms varied from 15 days to 8 years. Also, the duration of malignant nodules is from 1 month to 4 years.

Duration of Symptoms	No. of patients	Percentage
<1mon	1	2%
1-3 mon	8	16%
3-6 mon	11	22%
6-12 mon	6	12%
1-2yrs	11	22%
2-5yrs	11	22%
>5yrs	2	4%

SITE OF THE NODULE:

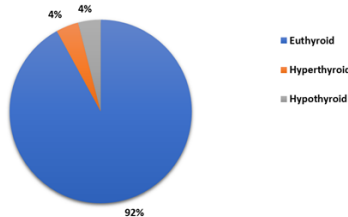
Out of 50 cases studied, 27 cases presented with a nodule in the right lobe of the thyroid gland and the remainder in the left lobe of thyroid. One patient among left sided solitary nodule had undergone right lobectomy 30 years back and presented with a recurrent nodule in the rest of the lobe.

SIZE OF THE NODULE:

In the present study, on clinical examination, the size of the nodule in its largest dimension varies from 2cm to 12cm. Most of the patients presented with the size of about 3 to 5 cm in the study. As such there is no correlation between the size of the nodule and the occurrence of malignancy.

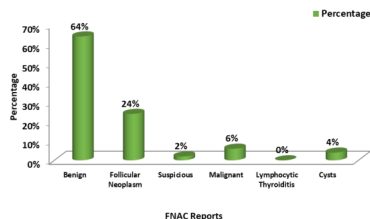
THYROID FUNCTIONAL STATUS:

Out of 50 cases, two presented with features of thyrotoxicosis, two with hypothyroidism and rest all were in the euthyroid state. Patients with thyrotoxicosis were made euthyroid using antithyroid drugs and operated and both cases turned out to be a toxic follicular adenoma. Patients with hypothyroidism were treated with thyroxine, USG neck revealed multiple nodules and managed by subtotal thyroidectomy.



FNAC REPORTS:

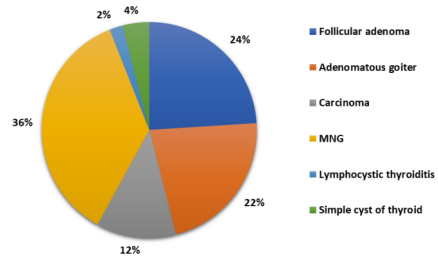
Fine Needle Aspiration Cytology is an important investigation in the evaluation of solitary nodule of thyroid. All 50 cases were subjected to FNAC during the course of the evaluation. FNAC reports are mainly categorized into 6 entities- Benign, follicular neoplasm, suspicious (of malignancy), malignant, lymphocytic thyroiditis, cysts. In our study, out of 12 follicular neoplasms, two turned out to be follicular carcinoma. One suspicious (of papillary carcinoma) case confirmed papillary carcinoma on histopathological examination. Three cases of papillary carcinoma were diagnosed pre-operatively by FNAC. Two cases diagnosed as cysts by FNAC confirmed to be simple cysts on histopathological examination.



AETIOLOGICAL INCIDENCE OF A SOLITARY NODULE OF THE THYROID:

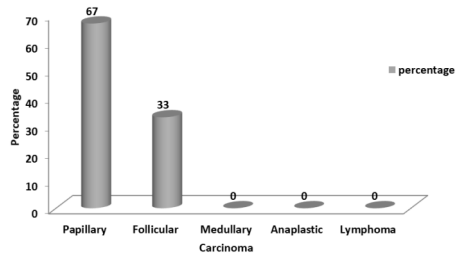
Out of 50 cases studied, common causes of solitary nodule are MNG, follicular adenoma and adenomatous goitre. The most common being dominant nodule of MNG which constitutes about 36% of cases. Follicular adenomas have 24% and adenomatous goitres have 22%

incidences. Out of 50 cases, six were malignant-4 papillary carcinoma and 2 follicular carcinomas. Ultrasonography detected suspicious findings in two cases among six malignant cases-1 papillary and 1 follicular. Three cases of papillary carcinoma were diagnosed with certainty by FNAC, one case was suspicious which turned out to be papillary CA on histopathological examination. Two cases of follicular carcinoma were diagnosed follicular neoplasm, one of them showed suspicious features on ultrasonographic examination.



TYPE OF CARCINOMA:

From the study, out of 6 carcinomas, 4 were papillary and 2 follicular. No case of medullary or anaplastic or lymphoma was detected. Papillary carcinoma accounts for 67% and follicular carcinoma accounts to 33%.



OPERATIVE PROCEDURE DONE:

Depending upon the clinical diagnosis and FNAC features, all the 50 patients underwent surgery. Among them, hemithyroidectomy, subtotal thyroidectomy and total thyroidectomy was done in 32,11, 7 cases respectively. In one case, HPE after hemithyroidectomy showed follicular carcinoma, then completion total thyroidectomy was done. In another case with recurrent nodule (previously hemithyroidectomy was done 30 yrs. back), total thyroidectomy was done, which showed features of MNG. Post-operatively, a suppressive dose of thyroxine was started for patients who had undergone total thyroidectomy. Two cases out of 7 cases of total thyroidectomy showed features of hypocalcaemia on the 2nd - 4th post-operative day, hence, they are supplemented with oral calcium and vitamin D3. All the cases were followed up for 6 months, two cases had a husky voice without any change in vocal cord movements.

DISCUSSION

This study mainly attempts to analyse the incidence of solitary thyroid nodule in relation to age & sex, STN to be turning out into MNG, % of euthyroid, hypothyroid, hyperthyroid states in STN, role of FNAC in the management of STN, to find incidence of adenoma, carcinoma, thyroiditis using the recent 2 yrs. data. This study includes only prospective (50) cases. 50 cases of thyroid swelling who were admitted during the study period were investigated, operated & follow up was done. The observations and results of the present study were compared with the available previous similar studies.

AGE AT PRESENTATION

In the study done by Qari F and Talepoor M separately in 2005, reported the mean age at presentation as 36.7years and 38.6years respectively. Rehman A.U. reported in 2009, the mean age of presentation as 34.7. Khurshid Anwar reported, in 2012, the mean age of presentation as 37years. From the present study, the mean age at presentation found to be 37.27years, correlates with the previous studies and the peak incidence found to be 3rd to 5th decades, which constitutes about 60% of the cases studied.

SEX INCIDENCE

In the study done by Gupta C (2001) the reported ratio of sex incidence was 1:5. In the present study, it's found to be 1:9, which correlates with previous studies. Because of periods of fluctuations in the demands of the hormonal requirement in a female in their life cycle (puberty,

menstrual cycles, pregnancy, menopause), the chances of thyroid nodule formation are very high as compared with male counterparts.

DISTRIBUTION OF NON-NEOPLASTIC AND NEOPLASTIC LESIONS DIAGNOSED BY FNAC

In the present study, neoplastic conditions include adenomas and all malignant lesions. From the present study, the ratio of non-neoplastic to neoplastic cases is about 2.125:1, which is comparable to the studies done earlier like Karur(2002), Hurtado Lopez M(2005), Nagada(2006), Chao CT(2007).

INCIDENCE OF MALIGNANCY:

6 out of 50 cases (12%) we have studied was malignancy on FNAC. Scott N. Pinchot et al(2010), in their study, reported the incidence of malignancy as 28%. In the study of Bhatta S et al (2012), the incidence of malignancy was 13.3% in the study group of 90 patients.

DISTRIBUTION OF MALIGNANCIES BY FNAC:

In the present study, among 4 cases of papillary CA, 3 were diagnosed with certainty by FNAC and the rest one was suspicious of malignancy. But both the follicular CA were initially reported as a follicular neoplasm. From the study conducted by karur K et al (2002) and Mundsad B et al (2006), the distribution of malignancy by FNAC is 18% and 4.16% respectively. From the present study, the distribution of malignancy is about 7.27%, which is comparable with the earlier studies.

AETIOLOGICAL INCIDENCE:

From the present study, the commonest cause of solitary nodule is MNG, which is comparable with the studies done by Zaman & Bhagbati (1971), Kapur (1982), Bhansali (1982). The common causes are follicular adenoma and adenomatous goitre.

INCIDENCE OF CARCINOMA:

From the literature, the incidence of malignancy in thyroid nodule ranges from 5% to 30%. From the present study, the incidence found to be 12 %, which is comparable with the study done by A S Fenn et al, Kapur et al, Rehman AU.

INCIDENCE OF MALIGNANT HISTOLOGIC TYPES:

Among the malignant lesions on histopathology, papillary carcinoma comprising of 67% and follicular carcinoma 33%. The incidence of papillary and follicular carcinoma in the studies of Scott N. Pinchot and Bhatta S et al were 72% & 12.5% and 69.2% & 23% respectively.

CONCLUSION:

The present study is a prospective analysis of 50 cases of a solitary nodule of the thyroid, admitted in Kurmool Medical College. Though a large number of patients are required to come to a better conclusion, based on the data and results obtained in the present study, the following conclusions can be drawn:

A solitary nodule of the thyroid is more common in females.
A solitary nodule of the thyroid is more common in the age group of 20-50 years.

Most of the patients with a solitary nodule of thyroid present with swelling alone.

Most of the patients with a solitary nodule of the thyroid are in euthyroid state and only a few present with toxicity or hypothyroidism. The incidence of malignancy in male patients presenting with solitary nodule of thyroid is more when compared to female patients.

The commonest cause of solitary nodule of the thyroid is a single palpable nodule of multi-nodular goitre.

USG can be used to detect multi-nodular goitre in patients presenting with solitary nodule thyroid.

FNAC is the investigation of choice in the evaluation of solitary nodule of the thyroid. It detects papillary carcinoma in a solitary nodule with high sensitivity and specificity.

Papillary carcinoma is the most common malignancy of thyroid, followed by follicular carcinoma.

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