

CLINICO-PATHOLOGICAL PRESENTATION AND MANAGEMENT OF SOLITARY NODULE OF THYROID AT TERTIARY CARE HOSPITAL

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Abstract

Background: A good understanding of the clinico-pathological presentation and treatment of solitary thyroid nodules is crucial since they might signify a variety of thyroid diseases. In light of this, the current study aims to assess the clinico-pathological presentation and care of a single thyroid nodule at Krishna Rajendra Hospital in Mysore.

Methods: During the 18-month period from January 2011 to July 2012, 55 patients with clinically determined solitary thyroid nodules were enrolled in this prospective study. They were admitted to the Department of Surgery at K R Hospital, which is affiliated with MMC & RI, Mysore. All patients underwent a thyroid profile, USG, FNAC, and histopathological evaluated, operated, and were properly followed up.

Results: The majority of cases 43(78%) of solitary nodule thyroid presented between the third and fifth decade. These cases were more prevalent in women (89.1%) and were in a euthyroid state (95%). The swelling in front of the neck was the most typical symptom, and the highest symptom duration was 1-2 years. There were 27 cases of thyroid nodules in the left lobe and 28 cases in the right lobe of the thyroid gland. The majority of the patients 31(56.4%) presented with sizes between 3 and 5 cm. MNG (33%), follicular adenoma (25%), and adenomatous goiter (25%) were its most frequent causes. Most of these were benign (89%) with Incidence of malignancy was about 10.9%. The most common malignancy was papillary carcinoma (67%), followed by follicular carcinoma(33%) Male to female ratio in case of malignant nodule was 1:5. Incidence of carcinoma in males presenting as thyroid nodule was higher 1 out of 6 (16.67%) compared to that of females 5 out of 49 (10.20%). FNAC was an important investigation in the evaluation, Surgery had been the treatment of choice in most of the cases and Transient hypocalcemia was common after total thyroidectomy for malignancies.

Conclusion: Solitary thyroid nodules are more common in women, especially in the age range of 20 to 50 years. They typically present with neck swelling, last for one to two years, and have a nodule in the right thyroid lobe that is between 3 and 5 cm in size, in a euthyroid state, and for the most part, benign in nature. Multi-nodular goitre was the most frequent cause, Papillary carcinoma is the most prevalent thyroid cancer, and surgery had been the preferred course of action.

Key words: Clinico-Pathological Characteristics , Management, Solitary Nodule of Thyroid

Introduction

"A palpable single clinically detectable thyroid nodule that is otherwise normal" is referred to as a solitary nodule. Thyroid nodules are extremely prevalent, though their prevalence varies depending on where you live. The prevalence of palpable nodules is just 4 to 7 percent, despite autopsy data showing a 50% prevalence of thyroid nodules larger than one centimetre in people without clinical indication of thyroid illness. Women are almost four times more likely than men to have solitary thyroid nodules.¹⁻³

Patients most frequently describe an accidental nodule discovered on imaging tests carried out for another cause or a large palpable lump in the neck when they first appear. A single nodule inside a multinodular gland is less likely to be carcinoma than a single dominant or isolated nodule, with an incidence of malignancy ranging from 2.7 to 30 percent and 1.4 to 10 percent, respectively. Between 10 to 30 percent of solitary thyroid nodules are malignant overall. However, due to the cumulative risk of each nodule, the overall risk of cancer within a gland with a solitary nodule is roughly equivalent to that of a multinodular gland.³⁻⁵

Differentiating hyperplasia from actual neoplasms is one of the main objectives of the evaluation of the solitary thyroid nodule. Detecting nodules of any size in up to 67 percent of the general population, ultrasonography is much more sensitive than palpation. When thyroid nodules are large enough to cause symptoms or when cancer is suspected, they should be removed. The choice to operate is decided on therapeutic or diagnostic grounds because the majority of nodules are asymptomatic and only 5 to 10 percent of nodules are malignant. The clinician's primary tools for determining whether surgical excision of a thyroid nodule is necessary are ultrasound imaging studies and cytology from fine-needle aspiration. Furthermore, it can be difficult to identify benign from malignant neoplasms using histologic criteria.⁶⁻⁹

Aims and Objectives

This present study aimed to evaluate the clinico-pathological presentation and management of Solitary Nodule of Thyroid at Krishna Rajendra Hospital, Mysore.

Materials and Methods

This prospective study included 55 patients , who were clinically diagnosed as solitary nodule of thyroid and admitted in the Department of Surgery at K R Hospital attached to MMC & RI, Mysore during the period of 18 months from January 2011 to July 2012.

These cases were studied in detail clinically and recorded as per the proforma. Routine investigations and specific investigations including FNAC of the nodule, Thyroid profile,

IDL, Plain X-ray neck, USG neck were done in all cases. Special investigations like radio-isotope scanning was not performed as the facilities were not available. All the patients were managed by surgery and diagnosis was confirmed by histo-pathological examination.

The patients were grouped according to different variables like age, sex, size of the nodule, site of the nodule, functional thyroid status, FNAC reports and histo-pathological examination reports, then analyzed and compared with the previous similar studies conducted elsewhere. Finally conclusions were drawn accordingly.

Treatment:

Pre-operative: Use of anti-thyroid drugs, beta-blockers, blood transfusions or any other medications were prescribed based on individual status and was noted

Operative: Position of the patient, type of anaesthesia, incision, type of operation planned, per-operative findings and type of operation performed were recorded.

Post-operative: Every patient was followed up post-operatively during the course of management in the hospital to note the development of and management of complications.

Follow-up: At the time of discharge, all the patients were advised to attend the surgical OPD regularly for follow up. Any recurrences or complications were noted. Thyroid functional status was assessed, accordingly thyroxine tablets were prescribed if necessary.

RESULTS

55 thyroid single nodule instances in all were examined. 37.24 years old on average was the presenting age. Patients range in age from 18 to 66, with the majority of cases 43 (78 percent) falling between the ages of 3 and 5. Out of the 55 cases examined, 49 were female and 6 were male, making the M: F ratio 1: 8.16. Additionally, females frequently developed cancerous nodules. Five of the study's six cancer cases involved female patients. (Figure-1)

In the current investigation, there was enlargement in the thyroid region in every instance. In 55 patients, 3 cases each of pain, discomfort, and dysphagia were present. These other symptoms were all rather modest in intensity. An ultrasonographic scan revealed that none of the patients had lymphadenopathy. One patient displayed signs of hypothyroidism, while two patients had symptoms of thyrotoxicosis. The thyroid profile of the latter patients verified the functional condition. In our study, the greatest symptom duration ranged from 1-2 years, with start symptoms lasting somewhere between 15 days and 8 years. Malignant nodules might last anywhere between one month and four years.

Out of the 55 cases examined, 28 (50.9%) cases had nodules in the right lobe of the thyroid gland, while the remaining 27 (48.1%) cases had nodules in the left lobe. One patient with a single left-sided nodule underwent a right lobectomy 30 years prior and was diagnosed with recurrent nodules in the other lobe. In the current study, the nodule's biggest dimension on a clinical examination ranges from 2 cm to 12 cm. The majority of the patients 31 (56.4%) presented with sizes between 3 and 5 cm. As a result, there was no connection between

nodule size and the occurrence of malignant nodules in the study. (Figure-1)

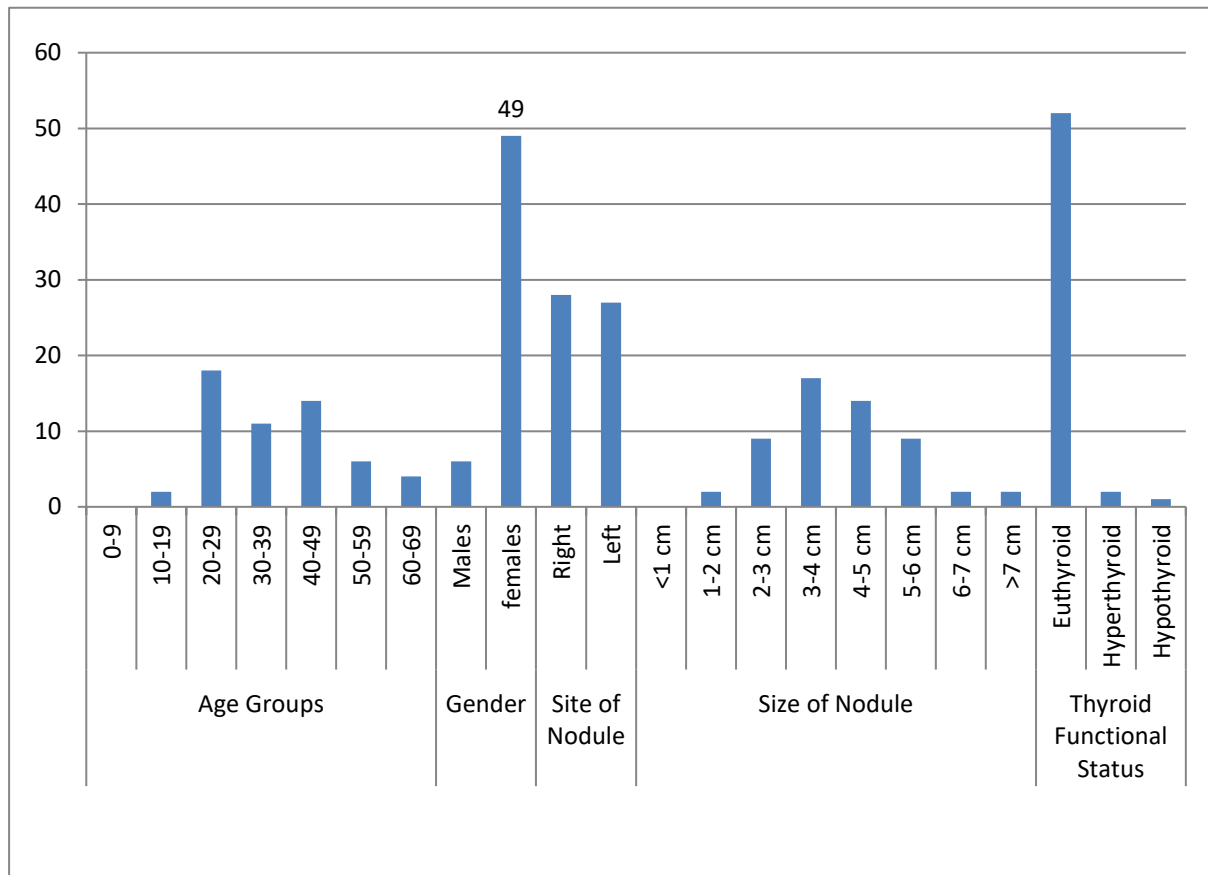


Figure-1: Socio-clinical characteristics of study participants

Out of 55 instances, two had thyrotoxicosis-like symptoms, one had hypothyroidism, and the others were all in a euthyroid state. Antithyroid medications were used to surgically remove follicular adenomas when thyrotoxicosis patients were made euthyroid. Thyroxine was used to treat a patient who had hypothyroidism. An ultrasound of the neck revealed many nodules, and a subtotal thyroidectomy was performed. A histological study then confirmed the patient's diagnosis of multi-nodular goitre. (Figure-1)

Aspiration Using Fine Needles, the crucial test in determining the severity of a thyroid single nodule is cytology. FNAC was applied to all 55 instances while they were being evaluated. Benign, follicular neoplasm, suspected (of malignancy), malignant, lymphocytic thyroiditis, and cysts are the six main categories under which FNAC reports fall. Two of the 16 follicular neoplasms in our investigation were follicular carcinomas. On histological inspection, papillary carcinoma in one case that was suspected to be papillary carcinoma was found. By using FNAC alone, three cases of papillary cancer were preoperatively identified. On histological investigation, two cases in which FNAC had identified cysts were shown to be straightforward (Figure-2)

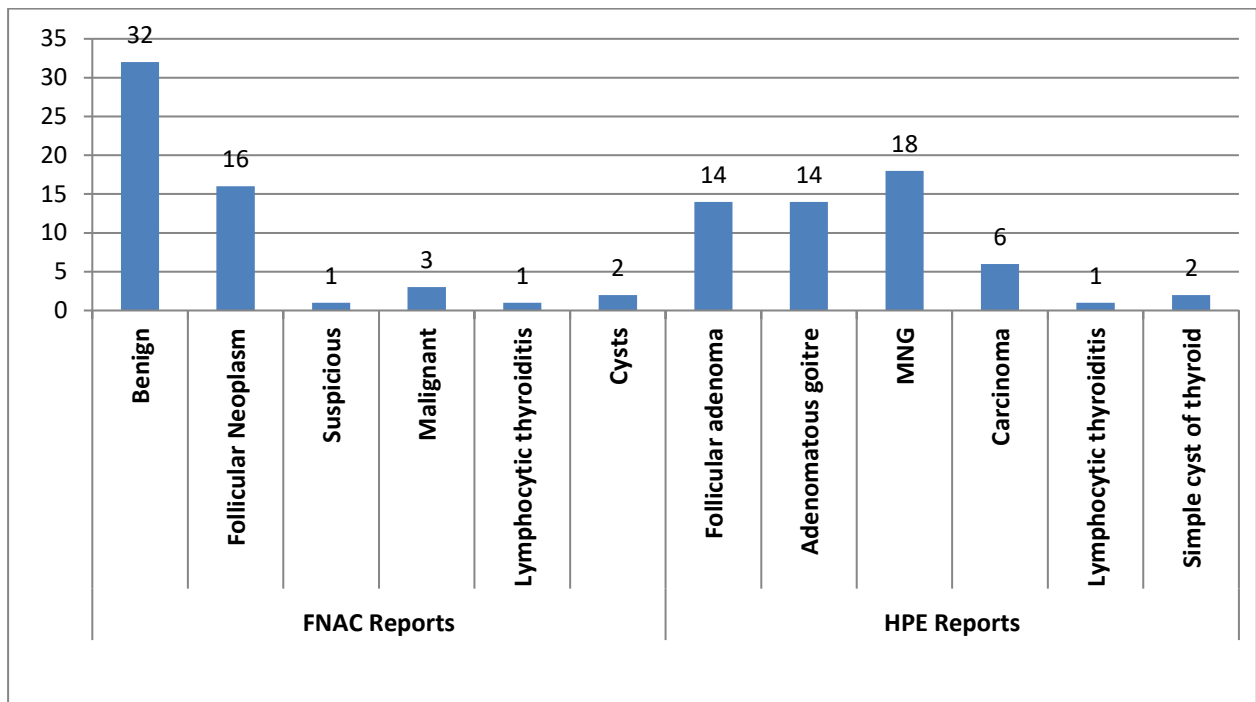


Figure-2: FNAC and HPE reports of the study participants

Out of 55 cases studied, common causes of solitary nodule were MNG, Follicular adenoma and adenomatous goiters which constitute about 18 (33%), 14 (25%) and 14 (25%) of cases respectively. Among 55 cases, six were malignant – 4 papillary carcinoma and 2 follicular carcinoma. 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. (Figure-2)

So, from this study, incidence of malignancy in solitary nodules was 6 out of 55 (10.9%). Out of 6 carcinoma, Papillary carcinoma accounts to 4 (67%) and follicular carcinoma accounts to 2 (33%). No case of medullary or anaplastic or lymphoma was detected. (Figure-4)

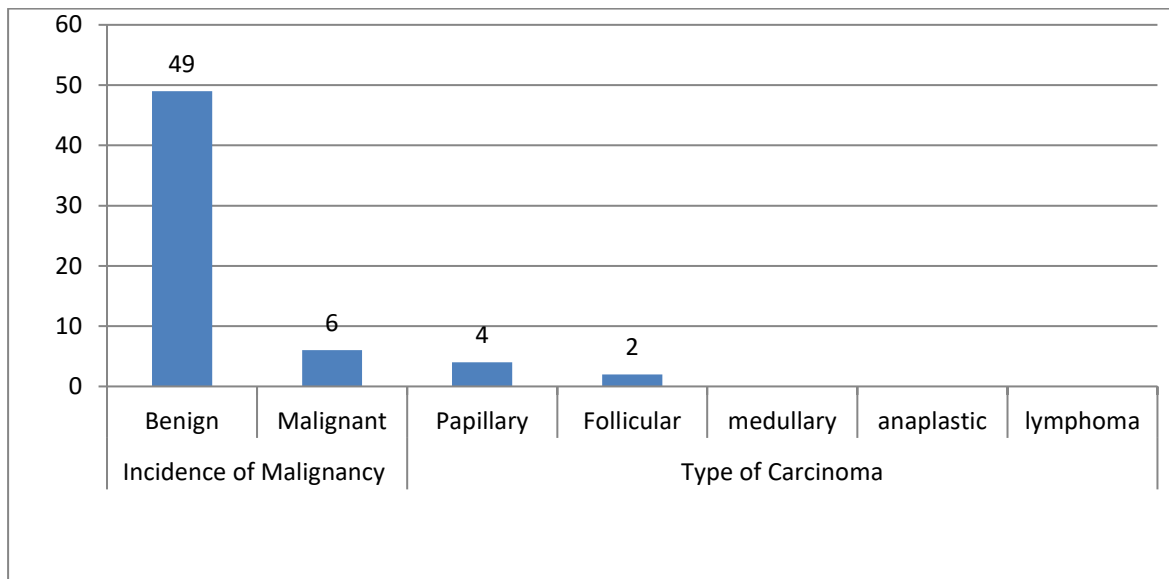


Figure-3: Incidence of carcinoma and type of carcinoma among study participants

Depending upon the clinical diagnosis and FNAC features, all the 55 patients' were undergone surgery. Among them, 33 patients had undergone hemithyroidectomy, 3 patients undergone near-total thyroidectomy, 12 cases undergone sub-total thyroidectomy and 7 cases undergone total thyroidectomy. In one case, HPE after hemithyroidectomy showed follicular carcinoma, then completion of total thyroidectomy 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, suppressive dose of thyroxine was started for patients who had undergone total thyroidectomy. Three cases out of 7 cases of total thyroidectomy showed features of hypocalcemia on 2-4 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 husky voice without any change in vocal cord movements.

Discussion

The third to fifth decades were found to have the highest incidence in the current investigation, accounting for around 43 (78 percent) of the cases examined, with the mean age at presentation being 37.27 years. In the third and fourth decades, the majority of prior datasets reported the maximal incidence of thyroid solitary nodules. This finding is equivalent to those attained by Rajendran S et al¹⁰ and Venkatachalapathy TS et al.¹¹

The ratio of sex incidence in the current study was determined to be 1:8.16, which is consistent with earlier investigations. In their respective studies, Dorairajan et al³ and Das et al¹² reported sex incidence ratios of 1:9 and 1:5.39. Females are more likely than males to

develop thyroid nodules as a result of times of variation in the demands of the hormonal requirements throughout their life cycle (puberty, menstrual cycles, pregnancy, and menopause).

Neoplastic diseases in the current investigation comprise adenomas and all malignant tumours. According to the research, the ratio of non-neoplastic to neoplastic instances is roughly 1.89:1, which is consistent with past studies.¹³⁻¹⁵ In the current investigation, FNAC made a definitive diagnosis in 3 of the 4 cases of papillary CA, and it raised concerns about malignancy in the remaining case. However, both follicular CA were first identified as follicular neoplasm. The distribution of malignancy found in the study was about 7.27, which is comparable to other investigations.¹⁴⁻¹⁷

According to the current study, MNG is the most frequent cause of solitary nodules, which is consistent with past investigations.¹⁴⁻¹⁷ Adenomatous goitre and follicular adenoma were two other frequent causes. According to the literature, thyroid nodules can become cancer anywhere between 5% and 30% of the time. The incidence from the current study was determined to be 10.9 percent, which is comparable to the preceding study.¹⁵⁻¹⁹

Conclusions

Solitary thyroid nodules are more frequent in females, in the age range of 20 to 50 years, and present with swelling in front of the neck. They often have symptoms that last between one and two years, are benign in nature, and are located in the right lobe of the thyroid gland. Multi-nodular goitre is the most frequent cause of a thyroid single nodule. Male patients who arrive with a single thyroid nodule had a higher incidence of cancer than female individuals. The most frequent thyroid cancer is papillary carcinoma, followed by follicular carcinoma.

The preferred test for evaluating a thyroid single nodule is FNAC. It has very little dangers. Only histology can definitively identify the precise pathology in such cases. It has a high sensitivity and specificity for papillary cancer detection in a single nodule. In patients with a single thyroid nodule, USG can be utilised to identify multi-nodular goitre.

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