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Original Research Article

A Clinical Study of Solitary Nodule of Thyroid

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Abstract

Background: A single thyroid nodule is defined as a discrete, palpable enlargement in otherwise seemingly healthy thyroid tissue, with the opposite lobe's visibility and palpability making it impossible to analyze the same. Lymphoma, sarcoma, squamous cell carcinoma, thyroid metastases, and mucoepidermoid cancer are a few uncommon causes of thyroid solitary nodules. The condition is estimated to afflict 4-7% of the entire population, with a 4:1 gender ratio favouring females. However, it is estimated that 5–10% of people develop cancer.

Material and Method: All patients received a thorough record-keeping and examination, and the FNAC and thyroid profile were used as the main lines of inquiry. USG was successfully used to find any impalpable nodules on the opposite lobe and to assess the nodule's vascularity, length, and any questionable areas.

Result: Even in cases of cancer, none of our cases showed signs of pain, hoarseness, or pressure. Before seeing a doctor, the majority of patients said that the swelling had been present for 1-2 years (28 of 80). The enlargement was discovered and brought to the patient's attention in the majority of cases (64 of 80), however in 16 of the cases, the patients themselves were the ones who first observed it.

Conclusion: Solitary nodule thyroid is a prevalent clinical condition that affects women more frequently than it affects men. usually appears as a painless swelling in the neck. The most crucial tests that aid in diagnosis is FNAC and thyroid profile. The most typical cause of SNT is MNG. Surgery is always the preferred course of action. The most effective and reasonably priced technique for treating it is a hemi thyroidectomy.

Keywords: Solitary Nodule, Thyroid, thyroidectomy, Thyroid cancer and FNAC

Introduction

Due to the thyroid's shape resembling ancient Greek shields, the word thyroid is derived from the Greek word for shield. Colles WH *et al*. should be given credit for recognizing the significance of the thyroid's single nodule as a distinct entity. They did this by observing that the prevalence of cancer was significantly lower than that of multinodular goiters. In medical practice, thyroid issues continue to be one of the most frequently seen endocrine issues, more frequently affecting women. A single thyroid nodule is defined as a discrete, palpable enlargement in otherwise seemingly healthy thyroid tissue, with the opposite lobe's visibility and palpability making it impossible to analyze the same. Patients with Graves'

disease and Hashimoto's thyroiditis may occasionally exhibit nodularity [1].

Lymphoma, sarcoma, squamous cell carcinoma, thyroid metastases, and mucoepidermoid cancer are a few uncommon causes of thyroid solitary nodules.

The condition is estimated to afflict 4-7% of the entire population, with a 4:1 gender ratio favouring females. However, it is estimated that 5–10% of people develop cancer [2].

The treatment and management of each affected person must be tailored after a thorough evaluation of all the criteria because solitary nodules are a source of disagreement and are seen to have a completely vast variation in their clinical, radiological, and histological functions.

The biggest issue in thyroid disorders is to ensure a thorough understanding of the biology of the disorder system of the thyroid because without it, a similar surgical therapy cannot be devised [3]. The performance of thyroidectomy has improved with the development of methods like FNAC and ultrasound.

Material and Methods

All patients who had an inpatient diagnosis of solitary thyroid nodule and who met our inclusion and exclusion criteria were included in the prospective trial.

Inclusion criteria

1. Patients over the age of 18 and under the age of 70
2. patients with a single thyroid nodule discovered during a clinical examination.
3. Patients who agree to take part in the study

Exclusion criteria

- Patients who have undergone prior thyroid surgeries, have enlarged thyroid glands other than solitary nodules, or who refuse to provide their consent to participate

Patients whose FNAC results indicated colloid nodules, cystic nodules, or follicular adenomas were recommended for hemi thyroidectomy, whereas patients whose FNAC results indicated papillary ca were recommended for total thyroidectomy with or without neck dissection depending on the reputation of the neck nodes. A finishing touch thyroidectomy was used to treat post-operative HPE suggesting follicular Ca.

Patients had been seen once every week for the first month and once every six weeks for the remainder of the year. Those who did not have cancer had their thyroxine replacement therapy started immediately.

Data for the have a look at became gathered in questionnaire layout after taking consent and the data had been evaluated with MS Excel 2007.

Results

Eight patients were removed from the study because they refused to be admitted and have tests done out of the total 88 patients who presented to our hospital's OPD with a single thyroid nodule. The average age of the survivors was between 30 and 39 years old, with the youngest being 19 and the oldest being 68. The patients were 35.5 years old on average. With 46% of patients falling in that range, the third and fourth decades of life are when the incidence is at its peak (Table 1). With 73 female patients and 7 male patients in the current study, there was a sex ratio of 10:1 favouring the female patients (Table 1).

Table 1: Age distribution of patients

Age	Female	Male	Total
10-19	4	2	6
20-29	12	2	14

30-39	29	4	33
40-49	15	2	17
50-59	6	3	9
60-69	1	0	1
Total			

The most prevalent clinical symptom at admission was swelling in the thyroid area, which was observed in all cases (80 of 80). There was one example of each of the two thyroid function disorders, hypo and hyperthyroidism. Thyroxine supplements were used to treat hypothyroidism before surgery. Antithyroid medications were used to treat hyperthyroidism for at least 6 weeks until the TSH levels were back in the normal range, at which point the patient had surgery (Table 2).

Table 2: Clinical features at presentation

Clinical features	Number
Swelling	1
Pain	0
Tracheal deviation	1
Euthyroid	74
Hyperthyroid	2
Hypothyroid	2

Even in cases of cancer, none of our cases showed signs of pain, hoarseness, or pressure. Before seeing a doctor, the majority of patients said that the swelling had been present for 1-2 years (28 of 80). The enlargement was discovered and brought to the patient's attention in the majority of cases (64 of 80), however in 16 of the cases, the patients themselves were the ones who first observed it. Prior to seeing the doctor for a thorough evaluation, the swelling had been present for anywhere between a month and seven years on average (Table 3).

Table 3: Duration of swelling in patients

Duration	Number
Up to 1 month	5
1 to 6 months	22
7-11 month	15
1-2 years	24
3-5 years	8
More than 5 years	7

The longer time before seeking medical help is thought to be a result of the patients at the authors' hospital having poorer socioeconomic and educational standing.

Size and site of the nodule

The current study found that the right lobe was most frequently affected, accounting for 52 of the total instances, while the left lobe was engaged in 28 of the total 80 cases (Table 4). Six of the ten cases of malignancy were detected in the right lobe and four of the ten in the left, with no conclusive relationship between the side afflicted and malignancy found. The isthmus was not seen to be involved.

Table 4: Lobe involved in patients

Size	Number
Right lobe	50

Left lobe	27
Isthmus	03
Total	80

Treatment Modalities

As no prior malignancy was found on FNAC in any of the eighty cases, hemi thyroidectomy became the standard treatment observed for solitary nodule thyroid. Patients who were MNG at the time of the operation had their thyroids completely removed (forty six of eighty). When cancer was found on post-operative histology, a complete thyroidectomy was performed (10 of 80).

Only two patients in our study experienced temporary hypocalcemia on the third post-operative day, which manifested as tingling and numbness in the limbs and carpopedal spasm on examination. These patients received oral calcium supplements to manage their post-operative complications (Table 5). Only after the signs and symptoms faded and the serum calcium levels fell below the normal range were those patients allowed to leave the hospital.

The average length of stay in the hospital was 8 days, with patients being discharged on the third post-operative day following surgery on the fourth day following admission. After being monitored for 24 hours for patients with transient hypocalcemia, both patients' symptoms subsided and their serum calcium levels were confirmed to be normal.

Table 5: Post-operative complications

Complications	Number
Hypocalcemia	2
Recurrent laryngeal nerve palsy	0
Reactionary hemorrhage	0
Secondary hemorrhage	0
Surgical site infection	0

Discussion

According to research by Yamashita *et al*., solitary thyroid nodule, the most frequent thyroid condition, was found to be more common in women, with a ratio of over 10:1 [4]. The findings on the collection by means of Khafagi *et al*. were confirmed, with 96% of all affected people falling in between the age corporations of 20-60 years and the age maximum generally affected being found to be between 30-39 years of age with 46% of the entire affected population falling in that bracket [5].

Nearly 97% of the whole range of patients who were evaluated all reported having swollen hands and feet as their main symptom. Prior to surgery, the patient developed hyperthyroidism, which was detected by radioiodine scanning and thyroid function tests. After the clinical line of control for the hyperthyroidism was established, the patient had surgery. Similar to how 1 was diagnosed as hypothyroid, started on T. Eltroxin, and then underwent surgery after TFT was normal. Prior to surgery, no patients reported stridor, hoarseness, or tracheal deviation. Additionally, no patients had full-size lymphadenopathy, which could raise the possibility of malignancy.

Nearly 65% of all cases involve the right lobe, with the remaining cases mostly affecting the left lobe (35%) and seldom involving the isthmus. The results are similar to those obtained sequentially by Ananthkrishna N *et al*, who discovered that the right lobe is frequently preferentially involved, but the real reason for this phenomenon has yet to be discovered [6].

According to recent research, nodule sizes can vary from 2x2 cm to a maximum of 7x10 cm, with the majority of cases falling between three and six centimeters, where 82% of all patients fall. It is known that the thyroid gland's size affects the likelihood of cancer, with nodules larger than 4 cm being much more likely to contain cancer. Since the majority of the nodules in our study are in the 3-6 cm range, careful evaluation of the patients is necessary to rule out malignancy [7].

All 80 patients received FNAC as the primary investigation, and USG-guided FNAC was performed when FNAC was determined to be non-diagnostic or inconclusive. Since we are a central authority institution, we may only use USG guided FNAC in situations when conventional FNAC failed, despite the fact that traditionally it has been thought to produce higher yields due to the capacity to separate suspicious portions of the nodule. Preoperatively, FNAC did not detect any malignancy while the patient was in good health, with 9 of the cases being diagnosed as follicular neoplasm [8].

Current research discovered that the primary etiology in our case collection was multinodular goiter that was observed on the table, accounting for nearly 56% of the total number of cases. This finding is similar to that of Bennedback *et al*., who discovered that the most commonplace etiology was multinodular goiter observed through adenoma, which constituted 26% of studied instances. Carcinoma made up 12.5% of the total number of cases, with papillary Ca being the most prevalent (11.5% of the total number of cases and 90% of malignancies), and follicular Ca accounting for just one occurrence of the disease [9].

In our study, the incidence of cancer was found to be 12.5%. The youngest cancer patient was discovered to be 20 years old, and the oldest was found to be 57. The average age of patients with a single thyroid nodule that is cancerous was discovered to be 36 years old. Studies have shown that both follicular and papillary CA exist at extreme ages (20>70), and that women are typically three times more likely to be affected than men [10]. Six of the ten cases of malignancy were found within the right lobe and four of the ten were found inside the left lobe, but no full-size association between the affected aspect and malignancy was ever mentioned.

Present research found that papillary Ca became the most frequently observed thyroid cancer in gift research, accounting for roughly 90% of all cancer cases. Follicular carcinoma in one case became apparent.

In all cases, the first step of treatment was a subtotal thyroidectomy. A sub general thyroidectomy was performed on patients for whom MNG was discovered during surgical exposure. In every case, careful dissection was done to prevent damaging the recurrent laryngeal nerve. There were no evident instances of primary or reactionary bleeding. Patients who had cancer discovered got a complete thyroidectomy and were closely monitored for six months.

Current research identified two occurrences of post-operative transient hypocalcemia that were treated with oral calcium supplements until the calcium level returned to normal. There had not been any further apparent major headaches following surgery.

Conclusion

Solitary nodule thyroid is a prevalent clinical condition that affects women more frequently than it affects men. usually appears as a painless swelling in the neck. The most crucial tests that aid in diagnosis is FNAC and thyroid profile. The most typical cause of SNT is MNG. Surgery is always the preferred course of action. The most effective and reasonably priced technique for treating it is a hemi thyroidectomy.

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