



CLINICAL STUDY AND MANAGEMENT OF SOLITARY THYROID NODULE

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ABSTRACT **AIMS AND OBJECTIVES:** To evaluate the patients with solitary thyroid nodule in terms of age and sex distribution, the role of FNAC and USG in patients and surgical options and the complication of surgery.
METHODS: The study was conducted in the Department of ENT, S.V.S Medical College and Hospital, Mahabubnagar, consisting of 50 cases of solitary thyroid nodule in all the ENT outpatient units, during the period of July 2015 to July 2017.
CONCLUSION: In Majority of the patients, Solitary thyroid nodule presentation was between 31-40 years. On FNAC majority of the lesions were benign and FNAC helps in diagnosing in the doubtful cases, hemithyroidectomy was the most commonly performed surgery

KEYWORDS : Solitary thyroid, Fine Needle Aspiration Cytology (FNAC), Ultrasonography (USG)

INTRODUCTION

The solitary nodule in the thyroid gland has aroused the interest of general surgeons because of its Malignant potential (Warren H. Cole 1949) and because of possibility of toxicity in the nodule and also complications like pressure effects and hemorrhage⁽¹⁾.

The clinically solitary thyroid nodule may be defined as "A thyroid swelling, which on clinical examination appears to be a single palpable nodule in an otherwise normal gland"⁽²⁾. Many solitary nodules are found asymptotically, but because of their size and position can result in obstructive symptoms of trachea and oesophagus (dyspnoea and dysphagia)⁽³⁾.

It is usually a benign lesion, a thyroid nodule larger than 1 cm in diameter is usually palpable. However, the detection of a nodule by palpation also depends on its location within the thyroid gland, on the structure of the patient's neck and on the experience of the examiner.

Sometimes it is very small and asymptomatic clinically but turns out to be fatal because of its highly malignant nature. The rate of malignant diseases in several large series varies in the range of 1.5% to 35 %⁽⁴⁾. The prevalence of malignancy in solitary thyroid nodule (STN) varies from 1.7% to 28.7%, and in cold STN, the prevalence of malignancy is even higher, varying from 8% to 31%^(5,6).

AIMS AND OBJECTIVES

1. To evaluate the patients with solitary thyroid nodules in terms of age and sex distribution
2. To evaluate the clinical presentation and management of Solitary thyroid nodule
3. To evaluate role of the FNAC, USG in the patients presenting with solitary thyroid nodule
4. To correlate histopathological findings postoperatively with clinically palpable solitary thyroid nodule

MATERIALS AND METHODS

This is a randomized prospective clinical study of patients with SOLITARY THYROID NODULE admitted in SVS Hospital, Mahabubnagar. A total number of 50 cases were studied from the period July 2015 to July 2017 in a span of 24 months. Complete clinical examination and necessary laboratory investigations were performed.

SOURCE OF DATA

All the patients attending the E.N.T outpatient department who had palpable single thyroid nodule and who were willing to undergo thyroid Surgery

INCLUSION CRITERIA

Patients with enlargement of thyroid gland, with palpable thyroid nodule.

EXCLUSION CRITERIA

Thyroid enlargement with the clinical features suggestive of thyrotoxicosis, hypothyroidism and patients not willing for surgery were excluded.

The operated specimen was sent for histopathological examination in all cases. Movement of vocal cords was noted in the preoperative and at the Post-operative period in every case.

OBSERVATION AND RESULTS

This study includes 50 cases of solitary thyroid nodules. Various factors regarding clinical presentation, findings of various investigation, histopathological characteristics, operative treatment and complications have been analyzed.

Among 50 cases of solitary nodule, 4 males and 46 females giving a male to female ratio of 1:7.23 showed female preponderance with 44%(88%). From the below table It is evident that solitary thyroid nodule is prevalent in all age groups. Most of the cases reported in age group of 21-30 (54%). Youngest patient is between 11 – 20 years, an oldest patient was above 65 years (Table 1).

TABLE 1: AGE AND SEX DISTRIBUTION

Age	Male	Female	Total	Percentage
11-20	0	3	3	6
21-30	1	26	27	54
31-40	2	7	9	18
31-50	1	4	5	10
51-60	0	3	3	6
>60	0	3	3	6
TOTAL	4	46	50	100

COMPLAINTS PRESENTATION

In my study all the 50 (100%) patient had swelling in the region of the thyroid in anterior neck as chief complain. After swelling pain over swelling was second most common presentation (16%). Other complains were dyspnoea, dysphagia, hoarseness of voice etc. (Table 2). Dyspnea, dysphagia and hoarseness of voice are the pressure symptoms, usually present in malignancy but it may be found in very large nodule⁽⁷⁾. Pain associated with recent increase in size of the nodule indicates haemorrhage into an adenoma. But sudden and recent increase in size may be found in malignancy⁽⁸⁾.

TABLE 2: PRESENTING COMPLAINTS

Complaints	No. of cases	Percentage
1. Swelling in front of neck	50	100
2. pain	8	16
3. dyspnoea	3	6
4. dysphagia	1	2

5.Change in voice(hoarseness)	1	2
6.Hypo thyroidism	0	0

PHYSICAL SIGNS

Movement with deglutition was present in all patients (100 percent), nodules confined to left lobe in 24 cases (48 percent), right lobe was seen in 26 cases (52 percent) was seen (Table 3).

TABLE 3: PHYSICAL SIGNS

Physical signs	No. Of cases	Percentage
Mobility with deglutition	50	100
Left lobe enlargement	24	48
Right lobe enlargement	26	52
TOTAL	100	100

FINE NEEDLE ASPIRATION CYTOLOGY (FNAC) CLASSIFICATION OF FNAC LESIONS

Out of the 50 cases, 35(93.33%) were diagnosed as benign cases. Four cases (6.67%) were diagnosed to be carcinoma clinically, 10 cases were Suspicious (Table 4).

TABLE 4: CLASSIFICATION OF FNAC LESIONS

Category	No. of cases	PERCENTAGE
Benign	35	70
Malignant	4	8
Suspicious	10	20
Inadequate	1	2

BENIGN LESIONS ON FNAC

In the present study, among 50 patients, FNAC was done in 35 cases of which 20 (40%) cases are Nodular goiter, 8 (16%) cases showed colloid nodule lesions, 6 (12%) cases showed Benign cystic lesion and one case showed Hyperplastic thyroid nodule (Table 5).

TABLE 5: DISTRIBUTION OF BENIGN LESIONS ON FNAC (35 BENIGN CASES)

Lesions	No. of cases	Percentage
Nodular goiter	20	46
Colloid nodule	8	16
Benign cystic lesion	6	12
Hyperplastic thyroid nodule	1	2

TABLE 6: HISTOPATHOLOGICAL CORRELATION OF BENIGN FNAC LESIONS

FNAC benign lesions	No. of cases	Histopathological diagnosis	No. of cases	No. of cases
Nodular goiter	20	1.Nodular goiter(4cases)	4	16
		2.Benign follicular adenoma(5)	5	
		3.hashimotos thyroiditis(1)	1	
		4. papillary carcinoma(4)	4	
		5. multi nodular(2)	2	
Colloid nodule	8	1. colloid nodule(6)	6	10
		2. Benign follicular adenoma(3)	3	
		3. multi nodular(1)	1	
Benign cystic lesion	6	1.colloid nodule(2)	2	7
		2.nodular goiter(1)	1	
		3.benign cystic lesion(1)	1	
Hyperplastic thyroid nodule	1	4.benign follicular adenoma(3)	3	
		1. Benign follicular adenoma(2)	2	2

Of 20 cases of nodular goiter, 16 cases proved to be benign but 4 cases were diagnosed as papillary carcinoma. In the category of benign cystic lesion, all cases proved to be benign.

In 35 cytologically diagnosed benign cases, 4 cases were found to be malignant by histopathology (Table 6).

MALIGNANT LESIONS ON FNAC

Among 50 cases, malignant lesion were found in 4 (8%) cases were papillary carcinoma. All cases of papillary carcinoma on FNAC diagnosis were confirmed by histopathology (Table 7).

TABLE 7: HISTOPATHOLOGICAL CORRELATION OF MALIGNANT FNAC LESIONS (4CASES)

Malignant Lesions	No. of cases	Histopathological diagnosis
Papillary carcinoma	4	Papillary carcinoma

SUSPICIOUS LESIONS ON FNAC

10 cases were diagnosed as 'suspicious' lesions on FNAC, due to the inability to unequivocally detect cytological features of either benign or malignant neoplasms. All cases were of follicular neoplasia and those follicular neoplasia cases were subjected to surgery and correlated with histopathology. Among 10 cases 7 cases were found to be benign and 3 cases to be malignant (Table 8).

TABLE 8: COMPARISON OF SUSPICIOUS LESIONS WITH HISTOPATHOLOGY

Suspicious Lesions	No. of cases	Histopathological diagnosis	No. of cases
follicular neoplasia	10	1.Papillary carcinoma	3
		2.Benign follicular adenoma	6
		3.colloid nodule	1

ULTRASONOGRAPHY

DISTRIBUTION OF LESIONS ON USG

In present study USG examination was done in all patients. Out of the 50 cases, 35(60%) were diagnosed as benign adenomas. 10 cases (20%) were diagnosed to be malignant, 05 cases(10%) was categorised as suspicious.

Out of 35 benign adenomas cases, 9 cases are with cystic nodule, 16 cases with hyperechoic lesions and 10 cases with MNG. 10 patients having Mixed Echogenic Nodule 10 were proved to be malignant. Out of 05 suspicious cases, 3 cases are with suspicious Mixed Echogenic Nodule and 3 cases are with suspicious MNG (Table 9).

TABLE 9: DISTRIBUTION OF LESIONS ON USG

CATEGORY	NO. OF CASES	LESION	NO. OF CASES
Benign	35	1.cystic	9
		2.hyperechoic	16
		3.MNG	10
Suspicious	05	1.suspicious MNG	2
		2.suspicious mixed echogenic nodule	3
Malignant	10	Mixed echogenic nodule	10

Among 10 USG diagnoses of malignant lesions, 5 were confirmed by histopathology, and 5 were disputed to be benign.

Among total 50 cases, no cases had multiple thyroid nodules on chemical examination, but USG revealed multiple nodule in 10 cases. Thus USG is more sensitive diagnostic modality to detect nodularity.

TYPE OF SURGERY DONE

In present study commonest surgery performed was Hemithyroidectomy in 42 (84%) cases. Total thyroidectomy was done in 8 patients (16%) (Table 10),

TABLE 10: TYPE OF SURGERY DONE

Type of surgery	No. Of cases	Percentage
Hemithyroidectomy	42	84
Total thyroidectomy	8	16

Post-Operative Complications

Among 50 cases, the commonest postoperative complication was

transient wound infection in 4(8%) of cases found, which subsided at the end of 1 week (Table 11). There was evidence of recurrent laryngeal nerve injury in 1 case.

Table 11: Incidence Of Post-operative Complications In Present Study

Post-operative complications	No. Of cases	Percentage
Recurrent laryngeal nerve injury	1	2
Parathyroid insufficiency	0	0
Wound infection	4	8
Mortality	0	0

DISCUSSION

The solitary thyroid nodule is a common disease having an incidence of 4-7% in the general population and mostly they are benign^(9,10).

In the present study age of the patient ranged from 19-70 years with a median age of 35.54 years and the number of males in the present study was 6 (12%) and the females were 44 (88%) with a male to female ratio of 1:7.33. Age distribution and male to female ratio of the present study is comparable to Jose et al (2002) where the age of patients ranged from 17-65 years with a median age 35.5 and the male to female ratio was 1:5.5.⁽¹¹⁾

Age distribution of the present study is also comparable with Taneri et al., where the mean age was 47 and the ranged being between 24 and 67 years⁽¹²⁾ and to a prospective study conducted by Sekhri et al (2001)⁽¹³⁾ where they found that thyroid swelling ranged between 9 years of age to 70 years with mean age of 33.9 years.

The commonest clinical presentation is the presence of swelling in front of the neck and majority presented between 6 months to 3 years. Aspiration was done from 2-3 sites. Afroze et al⁽¹⁴⁾ suggests repeated aspiration 2-3 times from different areas of the gland in case of larger nodules

When FNAC reports of 8 patients with thyroid carcinoma are checked, it was found that 4 out of 8 cases had a correct preoperative diagnosis and 3 cases were reported as suspicious and 1 case as benign. A 50% concordance between the histological and cytological diagnosis was found which rose to 87.5% on inclusion of the suspect cases as positive cases.

Altravilla and Pascale et al⁽¹⁵⁾ reported in their series a 45.83% concordance between the histological and cytological diagnosis which on including the suspect cases as cytologically positive raised to 70%. The overall sensitivity to detect malignancy in our series was 80%, while the specificity was 100% as all malignancies reported on FNAC were correctly confirmed by final histopathology.

FNAC has certain limitations because of suspicious diagnosis. In present series, 10(20%) cases were found to be suspicious, out of which 3 were found to be malignant on final histopathology examination. Because of this high incidence of malignancy in suspicious lesions, surgical removal of these nodules should be strongly considered in these cases.

The overall incidence of malignancy in solitary thyroid nodules varies from 10%-30% according to various studies. In our study, the overall incidence of malignancy in solitary nodule was 22%. Complication due to aspiration cytology is rare. In the present study, no complications were observed following aspiration procedure

The thyroid nodules on USG were subdivided in to 3 groups-benign, suspicious and malignant on the basis of various sonographic features. Features suggestive of malignancy on USG are - hypoechoic pattern, incomplete peripheral halo, irregular margins, internal micro calcification,

USG correctly diagnosed malignancy in 2 patients when FNAC failed to achieve the correct diagnosis. In our study, out of 10 cases diagnosed to be malignant on USG, 3 cases were confirmed on histopathology and remaining 7 cases were differed to be benign. In 2 cases in whom USG gave false negative diagnosis of benign disease, histopathology revealed papillary carcinoma. In present study, we found the sensitivity and specificity of USG in detecting malignancy to be 77.7%

and 80% respectively which are comparable to Watter et al⁽¹⁶⁾ where the sensitivity is 74% and specificity 83%

Watter et al. interpreted an USG report as suggestive of malignancy if the Nodule was solid or of a mixed solid-cystic variety and a hypoechoic and non-haloed lesion. They emphasized that the USG has added advantage of allowing the whole gland to be examined rather than the dominant nodule but was limited by the fact that no features were pathognomic for malignancy, so that it should be regarded as complementary rather than an alternative investigation to FNAC in the management of solitary thyroid nodules.

SUMMARY AND CONCLUSION

Total 50 cases of nodular thyroid were evaluated in SVS HOSPITAL from JULY 2015 to JULY 2017, with respect to age, sex and duration of symptoms, and investigated with routine hemogram, thyroid profile, fine needle aspiration cytology and USG thyroid. The results of FNAC and USG were compared with histology.

- Nodular goiter was more common in females (M: F ratio 1:7.33)
- Majority of the patients were in the age group of 31-40 years.
- Swelling in the anterior neck was the commonest mode of presentation.
- In majority of the patients, duration of swelling prior to presentation was between 6 months to 3 years.
- The incidence of malignancy in solitary nodule of thyroid was 22%.
- On FNAC majority of the lesions were benign, with nodular goiter being the largest group.
- Four cases proved to be papillary carcinoma of thyroid, which was diagnosed as benign on FNAC.
- FNAC is the diagnostic modality of choice for the initial workup of thyroid nodule.
- USG helps in diagnosing doubtful cases.
- USG proved to be a more sensitive modality to evaluate the nodularity of the thyroid than clinical evaluation.
- Hemithyroidectomy was the most commonly performed surgery for the thyroid.
- Except transient recurrent laryngeal nerve damage, there were no significant complications of the surgery when meticulously done.

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