

Study of Management of Solitary Thyroid Nodule

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Abstract: *Introduction: 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". Solitary thyroid nodule still remains a mystery for surgeons and pathologists in these days of recent advances, aims and objectives: To study the incidence rate of solitary thyroid nodule in different age group of population with respect to different pathology, investigations and management. Material and methods: The present study consists of study of 35 cases of solitary thyroid nodule. Complete history was taken and full clinical examination was carried out. Results: Majority of the patients is between 30-49 years of age. Female: male ratio is about 7.7. After swelling pain over swelling was second most common presentation (5.8%). Most common benign pathology is follicular adenoma (24%) and malignancy is papillary carcinoma (11.42%) and follicular carcinoma (11.42%). Commonest surgery performed was Hemithyroidectomy in 19 (54.28%) cases. Discussion: Majority of patients are euthyroid on presentation. FNAC is first investigation of choice. USG is a useful diagnostic aid. Modified neck dissection is advised for patients with enlarged nodes in papillary carcinoma and for those post-op patients who are diagnosed to have malignancy with lymph node metastasis.*

Keywords: Solitary Thyroid Nodule, Pathology, Investigations, Management

1. Introduction

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"[1]. Solitary thyroid nodule still remains a mystery for surgeons and pathologists in these days of recent advances, because of the variations in pathological findings presented by it. Sometimes it causes no symptoms and is very small clinically but turns out to be fatal because of its highly malignant nature. On other hand clinically a large solitary nodule, after its removal proves to be benign pathologically. Thus it displays a great variety in its ultimate outcome though clinical presentation remains same each time.

2. Aims and Objectives

- To study the incidence rate of solitary thyroid nodule in different age group of population.
- To compare incidence rate of malignancy in solitary thyroid nodule in male and female.
- To study clinical presentations in solitary thyroid nodule.
- To study different types of modalities of investigation and treatment modalities in solitary thyroid nodule, their advantage, disadvantage and complications.
- To study different pathologies of solitary thyroid nodule and their management accordingly.

3. Materials and Methods

The present study consists of study of 35 cases of solitary thyroid nodule. In this study I have included 35 patients admitted in civil hospital, Ahmedabad from 1st may 2005 to

1st may 2010. Case definition: For the purpose of inclusion in this study, a solitary thyroid nodule is defined as a single swelling involving either lobe or isthmus of the thyroid gland [2]. On admission, complete history was taken and full clinical examination was carried out and was recorded on a proforma.

4. Observation and Discussion

This study includes 35 cases of solitary thyroid nodules. Various factors regarding clinical presentation, findings of various investigation, histopathological characteristics, operative treatment and complications have been analyzed.

Age distribution:

Table 1: Shows age distribution

Age Group (In Yrs.)	Benign	Malignant	Total
10 – 19	1	0	1 (3%)
20 – 29	5	1	6 (17%)
30 – 39	9	2	11 (31%)
40 – 49	6	2	8 (23%)
50 – 59	4	1	5 (14%)
60 – 69	1	1	2 (6%)
70 - 79	0	2	2 (6%)
TOTAL	26 (74%)	9 (26%)	35 (100%)

It is evident from the above table that solitary thyroid nodule is prevalent in all age groups. Most of the cases reported in age group of 30-39(31%).

Sex distribution:

Table 2: Shows sex distribution in present study

Total – 35 (100%)			
Male(4)		Female(31)	
Benign	Malignant	Benign	Malignant
1 (25%)	3 (75%)	25 (71.42%)	6 (28.58%)

In present study 31 out of 35 (88%) cases were female. Here 3 out of 4 nodules in male were malignant (75%) and 6 out of 31 nodules in women were malignant (28.58%). It is evident from the above study that females are more commonly affected than males. Here female: A male ratio is 7.7 and as far as malignancy in solitary thyroid nodule is concerned males is 2.6 times more commonly affected than female.

Mode of presentation:

Table 3: Shows mode of presentation

Symptoms	No. of Patients
Swelling on neck	20
Pain	6
Recent Increase in size	3
Dyspnea	3
Hoarseness of voice	2
Dysphagia	1

In my study all patient had swelling over the anterior or lateral aspect of neck but 20 patients presented with swelling as chief complain. After swelling pain over swelling was second most common presentation (5.8%). Other complains were dyspnoea, dysphagia, hoarseness of voice etc. Dyspnea, dysphagia and hoarseness of voice are the pressure symptoms, usually present in malignancy but it may be found in very large nodule [3]. 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 [4].

Clinopathological correlation:

Table 4: Shows clinopathological correlation in my study.

Presentation	Benign	Malignant	Total
Swelling in front of neck	26 (74%)	9 (26%)	35 (100%)
Weight loss	3 (9%)	3 (9%)	6(18%)
Pain	4 (11%)	2 (6%)	6 (17%)
Weight gain	4 (11%)	0 (0%)	4 (11%)
Lethargy	4 (11%)	0 (0%)	4 (11%)
Dyspnea	1 (3%)	2 (6%)	3 (9%)
Recent increase in size	0 (0%)	3 (9%)	3 (9%)
Neck nodes	0 (0%)	3 (9%)	3(9%)
Hoarsness of voice	0 (0%)	2 (6%)	2 (6%)
Dysphagia	0 (0%)	1 (3%)	1 (3%)

It is evident from this study that commonest symptom is swelling in front of neck which is present in all patients. Dyspnea, dysphagia and hoarseness of voice are the pressure symptoms, usually present in malignancy but it may be

found in very large nodule. 2 patients had hoarseness of voice, both were proved malignant.

Duration of symptoms:

There was no much difference between natures of the lesion as regards the duration of symptoms varying from a few days to several years. In present study longest duration was 12 years in one patient which proved to be colloid nodule. Another patient having same duration which proved to be papillary carcinoma.

Radiological appearance:

In present study USG examination was done in all patients. Out of 17 patients having cystic nodule 1 proved to be malignant after histopathological examination. Out of 10 patients having solid lesion 6 proved to be malignant. Out of 8 patients having mixed echo 6 were proved to be benign and 2 were malignant.

Table 5: Results of Fine Needle Aspiration Cytology and its Comparison with Result of Histopathological Examination:

Pathological Finding	On FNAC	On H/P/E
Colloid Goiter	22	21
Follicular Neoplasm	8	9
Papillary Carcinoma	4	4
Medullary Carcinoma	1	1
Anaplastic Carcinoma	0	0
Total	35	35

Most common type of pathology observed in benign group is follicular adenoma (24%) and in malignant group is papillary carcinoma (11.42%) and follicular carcinoma (11.42%) in present study. In present study of 35 patients, 22 patients had colloid nodule on cytology, out of which 21 was colloid on histopathological examination, but in one case was proved as follicular carcinoma. 8 patients had follicular neoplasm on cytology, out of which 3 patients had follicular carcinoma and 5 patients had follicular adenoma on histopathological examination. Here one patient had medullary carcinoma which was confirmed on histopathological examination [5, 6, and 7].

Table 6: Type of surgery done

Type of Surgery	No. of Cases
Hemithyroidectomy	19
Total thyroidectomy	10
Near-total thyroidectomy	3
Total thyroidectomy with MND	2
Total thyroidectomy with RND	1

In present study commonest surgery performed was Hemithyroidectomy in 19 (54.28%) cases [8]. Total thyroidectomy with MND was done in 2 cases with papillary carcinoma [9]. In one case with enlarged node left lobe of thyroid was having a nodule which was proved to be

papillary carcinoma on FNAC. Another case on lesion was confined to right lobe, opposite lobe was normal with enlarged lymph nodes on right side proved to be papillary carcinoma with positive nodes. Total thyroidectomy with RND was done in one case of medullary carcinoma [10].

Near-total thyroidectomy was done in 3 patients, as on exploration solitary nodule was found to be multinodular goiter [11].

Total thyroidectomy with classical RND done for FNAC suspected medullary carcinoma which proved medullary carcinoma with metastasis. Total thyroidectomy was done in 10 cases; 2 for papillary carcinoma and 8 for follicular neoplasm.

5. Follow Up

Post Operative Hormone Therapy: In present study all patients treated with total thyroidectomy were given thyroxin postoperatively life-long.

Radiotherapy: RT was given to 2 patients of whom one patient was having follicular carcinoma 5000 -R given following total thyroidectomy. Another patient was having papillary carcinoma with metastasis- 4000 R to neck region following total thyroidectomy + MND [12].

6. Post Operative Complications

Table 7: incidence of post-operative complications in present study

Complication	No. of patient
Wound infection	2
Stitch granuloma	1
RLN palsy	0
Mortality	0
Hypoparathyroidism	0

Table 8: Shows status of the patient with malignancy

Status	No. of Cases
Alive with disease under control	8
Lost to follow up	1
Alive with persistent disease	0
Expired	0

In present study, 9 patients had malignant disease, out of which 8 patient had no complains after treatment [13]. One patient did not turn up for follow up. Patient with benign were mostly healthy and without complain one patient who developed stitch granuloma which was excised [14].

7. Conclusion

- Majority of the patients are between 30-49 years of age.
- Incidence of solitary thyroid nodule is more common in female. Female: male ratio is almost about 7.7.
- Malignant lesion is almost about 2.6 times higher in males than females.

- Commonest symptom is swelling over anterior or lateral aspect of neck.
- Majority of patients are euthyroid on presentation.
- FNAC is first investigation of choice. It is very useful, cost-effective, safe, and simple and has high diagnostic accuracy. It is highly sensitive and specific for diagnosis of thyroid nodule. However, it cannot differentiate between follicular carcinoma and follicular adenoma.
- USG is a useful diagnostic aid as it helps in distinguishing a cystic and solid nodule and for USG-guided FNAC. It also detect very small nodule clinically impalpable. But it does not help in differentiating benign from malignant nodule.
- Among the benign lesion colloid goiter is most common and papillary and follicular carcinoma are common in malignant lesion.
- Minimal surgery performed for solitary nodule is hemithyroidectomy.
- Modified neck dissection is advised for patients with enlarged nodes in papillary carcinoma and for those post-op patients who are diagnosed to have malignancy with lymph node metastasis.
- All the patients with malignant lesion treated with total thyroidectomy were given thyroxin post-operatively life-long.

References

- [1] Bailey and Love’s short practice of surgery. The thyroid and parathyroid gland.
- [2] Brooks J.R.: The solitary thyroid nodule. Am. J. of Surgery 125, 477, 1973.
- [3] F. Iida et al Thyroid Carcinoma. World J. Surg. Vol.45, No.4, July/August, 2007.
- [4] Sherma SI: Thyroid carcinoma. Lancet 2003; 361:501-511.
- [5] George Crile Aspiration biopsy of thyroid nodules. Surg. gynec. 6 Obst. Feb. 2006, Vol.136, 241-245.
- [6] Richard A. Prinz: Fine needle aspiration biopsy of thyroid nodule. Ann. Surg. 2006, June.
- [7] Morgan JL, Serpell JW, and Cheng MS: Fine-needle aspiration cytology of thyroid nodules: How useful is it? Aust N Z J Surg 73:480, 2003.
- [8] Hermus AR, Huysmans DA: Treatment of benign nodular thyroid disease. N Engl J Med 2001; 338:1438-1447.
- [9] Schlumberger MJ: Papillary and follicular thyroid cancer. N Engl J Med 1998; 338:297-306.
- [10] Van Herle A.J: Management of thyroid nodules II. Scanning technique, thyroid suppressive therapy, and fine needle aspiration. Head and neck surgery; 3: 297-322, 2000.
- [11] Hedayati N, McHenry CR: The clinical presentation and operative management of nodular and diffuse substernal thyroid disease. Am Surg 68:245, 2002.
- [12] DeGroot LJ, Kaplan EL, McCormick M, et al: Natural history, treatment, and course of papillary thyroid carcinoma. J Clin Endocrinol Metab 71:414, 1990.
- [13] Fewins J, Simpson CB, Miller FR: Complications of thyroid and parathyroid surgery. Otolaryngol Clin North Am 36:189, 2003.

[14]A. Psarras, S. N. Papadopoulos, D. Livadas, A. D. Pharmakiotis, D. A. Koutras British journal of surgery, volume59, page 545-548

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