

Original Research Article

Clinicopathological study of solitary thyroid nodule in Kolhan belt of Jharkhand

Rajeev Saxena¹, Shiwani Kanth², Rohit Kumar Jha¹, Devandra Jee^{1*}

¹Department of ENT, MGM Medical college, Jamshedpur, Jharkhand, India

²Department of ENT, RIMS, Ranchi, Jharkhand, India

Received: 03 March 2021

Revised: 13 May 2021

Accepted: 14 May 2021

*Correspondence:

Dr. Devandra Jee,

E-mail: kanth.shivani38@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Thyroid disorders are commonly encountered in our daily practice and specially in countries like India and Nepal (foothill areas). There are variety of lesions that can arise within thyroid gland. In such scenario it is important to diagnose neoplastic and non-neoplastic conditions accurately with minimum complications so that proper management can be done as early as possible. The aim of the study was to know clinical spectrum of solitary thyroid nodules and diagnostic accuracy of fine needle aspiration cytology as compared to histopathological examination.

Methods: We conducted our study over a period of 21 months from July 2018 to March 2020. 74 patients who gave consent and presented with solitary thyroid swelling were included in the study.

Results: In our study, cases mostly presented in the age group of 31-40 years with a female preponderance. Colloid goiter was the most common pathology which presented as solitary thyroid nodule. Among neoplastic lesions, follicular adenoma was the most common benign neoplasia with papillary thyroid carcinoma being the most common malignancy. FNAC had sensitivity of 78%, specificity-100%, positive predictive value-100%, negative predictive value-88% and diagnostic accuracy-92%.

Conclusions: Majority of solitary thyroid nodules are found in females of middle age group. In our study we found FNAC as valuable diagnostic tool specially in benign cases.

Keywords: Solitary thyroid nodule, Colloid goitre, Fine needle aspiration cytology

INTRODUCTION

Thyroid gland is the largest endocrine gland and its disorder is one of the commonest encountered endocrinal disorder.^{1,2} It is located superficially in neck and hence its direct physical examination is possible. Normally thyroid gland is impalpable. A discrete swelling in an otherwise non-palpable gland is called solitary thyroid nodule.³

Solitary nodules are one of the commonest presentations of thyroid disorders. Mostly they are benign but 5% of all palpable nodules are malignant.² Risk of malignancy is higher in solitary nodules as compared to multinodular

goiter and thus should be treated with high degree of suspicion and proper treatment plan⁴.

Its prevalence depends on age, sex, diet, therapeutic and environmental radiation exposure.

Normally the prevalence of solitary thyroid nodule increases with age.⁵ Mostly patients present asymptotically but can present with enlarged cervical lymph nodes and obstructive symptoms of trachea and oesophagus.

Diagnosis is mainly done by clinical examination, fine needle aspiration cytology, and ultrasonography.

FNAC plays an important role in diagnosis of thyroid swelling but it has some limitations and diagnosis is confirmed by histopathological examination.

Aim and objective

The aim and objective of the study was to know the clinical presentation of disease and will correlate the FNAC findings with post op histopathological examination.

METHODS

This was a prospective study carried out in department of ENT and Head and Neck surgery, MGM Medical college and hospital, Jamshedpur covering patients from different areas of Kolhan belt of Jharkhand, from July 2018 to March 2020 for a period of about 21 months.

Inclusion criteria

Patients between age group 11-70 years were included in the study who presented in ENT department with palpable thyroid swelling.

Exclusion criteria

All patient (a) who did not give consent; (b) with history of radiation exposure to neck; and (c) who presented with thyroid swelling which were not nodular or multinodular were excluded from the study.

Patient attending outpatient department with neck swelling were diagnosed solitary thyroid nodule based on detailed history, clinical examination and investigations including thyroid function test (serum T3, T4, TSH), ultrasonography neck and fine needle aspiration cytology (FNAC). All patients who gave consent were operated and specimen was sent for histopathological examination.

RESULTS

In this study 74 patients were evaluated over a period of 21 months. Age of patients ranged from 10-70 years with maximum no of cases in the age group of 31-40 years. Table 1 shows the age distribution of 74 patients with Mean age of presentation being 40.9 years.

Table 1: Age and sex distribution.

Age distribution (years)	No. of cases	Percentage (%)
11-20	4	5
21-30	10	14
31-40	26	35
41-50	16	22
51-60	12	16
61-70	6	8

Out of 37 cases, 28 patients were females (76%) and 9 patients were males (24%) with male to female ratio being 3:1.

Table 2 shows sex distribution of 37 patients with female predominance.

Table 2: Sex distribution.

Sex distribution	No. of cases	Percentage (%)
Female	56	76
Male	18	24

Table 3 shows various sign and symptoms of patients at the time of presentation. All patients presented to department of ENT with swelling in front of the neck. One patient presented with complaint of dysphagia and dyspnoea which was later on diagnosed as medullary thyroid carcinoma. Patients with enlarged neck nodes were later on diagnosed as papillary thyroid carcinoma on histopathological examination. None of them presented with complain of hoarseness of voice or features of hypo/hyperthyroidism.

Table 3: Presenting complaints.

Presenting complaint	No. of cases
Neck swelling	74
Pain in the swelling	4
Dysphagia	2
Dyspnoea	2
Enlarged neck nodes	4
Hoarseness of voice	-
Features of hypo/hyperthyroidism	-

Table 4 shows the FNAC findings of all patients. Total non-neoplastic cases were 52 whereas total neoplastic lesions came out to be 22. Colloid goitre is most common pathology whereas follicular neoplasm is the most common neoplastic lesion.

Table 4: Distribution of lesions on FNAC.

Lesions on FNAC	No. of cases
Colloid goitre	40
Nodular goitre	12
Follicular neoplasm	16
Papillary carcinoma	4
Medullary carcinoma	2

Table 5: Histopathological diagnosis.

Histopathological findings	No. of cases
Colloid goitre	36
Follicular adenoma	16
Multinodular goitre	10
Follicular carcinoma	4
Papillary carcinoma	6
Medullary carcinoma	2

Table 5 shows the post-operative histopathological diagnosis of all presented cases. Colloid goitre remains the most common pathology whereas papillary thyroid carcinoma being the most common malignancy.

Table 6 shows the correlation of FNAC with final histopathological findings. On FNAC total cases of colloid goitre was 40. Later on, HPE report showed 4 cases of colloid goitre as follicular adenoma and papillary thyroid carcinoma. On FNAC total cases of follicular neoplasm was 16. Out of them 12 were diagnosed as follicular adenoma and 4 as follicular carcinoma on final histopathological examination. One case of nodular goitre was later on diagnosed as follicular adenoma.

Table 6: FNAC correlation with HPE findings.

FNAC	No. of cases	HPE	No. of cases
Colloid goitre	40	Colloid goitre	36
		Follicular adenoma	2
		Papillary carcinoma	2
Nodular goitre	12	Multinodular goitre	10
		Follicular adenoma	2
Follicular neoplasm	16	Follicular adenoma	12
		Follicular carcinoma	4
Papillary carcinoma	4	Papillary carcinoma	4
Medullary carcinoma	2	Medullary carcinoma	2

Table 7: Sensitivity-78%, specificity-100%, PPV-100%, NPV-88%.

FNAC		HPE		Total
		Neoplastic	Non-neoplastic	
FNAC	Neoplastic	22	0	22
	Non-neoplastic	6	46	52
	Total	28	46	74

In this series the specificity of FNAC for neoplastic lesions is 100% and overall diagnostic accuracy is 92%. FNAC has lower sensitivity of about 78% for the diagnosis of neoplastic cases as 50% of malignant cases were falsely classified as non-neoplastic lesions. Moreover, sensitivity of FNAC for non-neoplastic cases is 100% as all non-neoplastic cases were accurately diagnosed by FNAC.

DISCUSSION

In our study, we had patients of age ranging between 11 to 70 years. Most of them were in the age group of 31-40 years (35%), followed by 41-50 years (22%). Mean age of presentation was 40.9 years. These findings are in similarity with Patel et al.¹ There was female preponderance with 28 (76%) female and 9 (24%) male, which is similar to many other studies.⁶⁻⁹

All 74 patients presented with neck swelling (100%) out of which only 4 patients had associated pain. Keshri et al also had similar finding with neck swelling in 100% patients while 15% of them had pain.¹⁰ In Patel et al study 100% had neck swelling but only 1% had associated pain.¹ In our study 2 (3%) patient had obstructive symptoms that is dysphagia and dyspnea and 4 (5%) patients had enlarged neck nodes which is in concordance to study done by Bhamre et al.¹¹

On FNAC, the most common lesion was colloid goiter (54%) followed by follicular neoplasm (22%). Findings are comparable with Gupta et al and Golder et al in which diagnosed colloid goiter came out to be 52% and 70% respectively and follicular neoplasm was 16% and 24% respectively.^{12,13} While in Patel et al colloid goiter was diagnosed in 61% patients followed by nodular goiter in 19% patients.¹

On histopathological examination, out of 74 patients, most of them had colloid goiter (49%), followed by follicular adenoma (22%) which is similar to Rahul Chetan et al study.¹⁴ In our study most commonly found malignancy was papillary carcinoma of thyroid (8%) followed by follicular thyroid carcinoma (5%). In this study specificity, sensitivity, PPV and NPV were 100%, 78%, 100% and 88% respectively. Patel et al showed similar finding with sensitivity 55.6%, specificity 100%, PPV 100% and NPV 90%.¹ In present study diagnostic accuracy of FNAC in diagnosing neoplastic lesion of thyroid gland came out to be 92% which is very much similar to study conducted by Susmitha et al and Prakash et al in which diagnostic accuracy was 90% and 95.7% respectively.^{15,16}

CONCLUSION

Solitary thyroid nodule is commonly seen in females of middle age group. Presence of obstructive symptoms such as dysphagia and dyspnoea and enlarged neck nodes are mostly indicative of malignancy. Diagnostic accuracy of FNAC in our study is 92%. Hence, FNAC is a valuable tool in cases of solitary thyroid nodule. Moreover, it is simple and minimally invasive technique. However, cases which are clinically suspicious for malignancy needs proper follow up as FNAC can give false negative result which can alter the surgical outcome.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Patel S, Gattani VJ, Nitnaware AZ. Clinicopathological study of thyroid swelling and its management. Int J Otorhinolaryngol Head Neck Surg. 2020;6:727-31.
- Prabha AG. A Clinicopathological study of solitary nodule thyroid with special reference to imprint

- cytology. Rajiv Gandhi University of health Sci. 2012.
3. Varghese S, Vilasinamma L. Solitary thyroid nodule- incidence and histopathology- a 3-year study. *J Evolution Med Dent Sci.* 2017;6(88):6153-6.
 4. Babu KGS, Shantharam L. A Clinicopathological Study of Solitary Nodule of Thyroid. *Int J Scientific Res.* 2014;3(4):307-9.
 5. Dhanaram B, Arunachalam J, Muthukumaraswamy B. A clinicopathological study of solitary nodule of thyroid. *Int Surg J.* 2017;4(7):2288-90.
 6. Zambudio AR, Rodriguez J, Riquelme J, Soria T, Canteras M, Parrilla P. Prospective study of postoperative complications after total thyroidectomy for multinodular goiters by surgeons with experience in endocrine surgery. *Ann Surg.* 2004;240(1):18-25.
 7. Godara R, Garg P, Singla S. Thyromegaly: lack of consensus in management. *The Internet J of Surg.* 2007;10(1):8678.
 8. Haque GS, Hossain MJ, Haque S, Rahman MA. A Clinicopathological Study of Solitary Thyroid Nodule. *Med Today.* 2019;31(2):85-8.
 9. Islam MS, Siddiquee BH, Akhtar N, Salam KS, Aktaruzzaman M. Comparative study of FNAC and histopathology in the diagnosis of thyroid swelling. *Bangladesh J Otorhinolaryngol.* 2010;16(1):35-43.
 10. Keshri SP, Kumar S, Thakur S. Clinico-Pathological Study of Solitary Thyroid Nodule with Special Reference to Fine Needle Aspiration Cytology. *Int J Sci Res.* 2017;6(2):789-94.
 11. Bhamre S, Chaudhari S. Clinical Study of Solitary Nodule of Thyroid at Tertiary Health Centre. *MVP J Med Sci.* 2019;6(1):15-21
 12. Gupta M, Gupta S, Gupta VB. Correlation of fine needle aspiration cytology with histopathology in the diagnosis of solitary thyroid nodule. *J Thyroid Res.* 2010;379051.
 13. Samir G, Nibedita SS, Kumar PR, Rajlaxmi P, Swarupjit G. A Clinicopathological Study of Solitary Thyroid Nodule. *J Pharm Biomed Sci.* 2015;5(03):233-7.
 14. Chetan VR, Veeresalingam B, Kumar MK, Durbesula PT, Rao PS. A study on the clinical manifestations and the incidence of benign and malignant tumors in a solitary thyroid nodule. *Int J Res Med Sci.* 2013;1(4):429-34.
 15. Susmitha MS, Veena S, Babu RK. Fine Needle Aspiration Cytology of Solitary Thyroid Nodule with Histopathology Correlation. *Pacific Group J.* 2017;4(6):755-60.
 16. Gupta N, Goswami B, Hunjan PS, Shankar LR, Kakar A. Evaluation of the clinicopathological profile of solitary thyroid nodules: Our experience. *Thyroid Res Pract.* 2016;1-12.

Cite this article as: Saxena R, Kanth S, Jha RK, Jee D. Clinicopathological study of solitary thyroid nodule in Kolhan belt of Jharkhand. *Int J Otorhinolaryngol Head Neck Surg* 2021;7:959-62.