

Evaluation of Thyroid Swelling By Fine Needle Aspiration Cytology: A Single Institute Experience in Uttrakhand Region of Northern India.

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Abstract

Background

Thyroid lesions are one of the common conditions encountered in clinical practice. In India especially Uttrakhand region Iodine deficiency is a major public health problem so many of the patients presents with solitary or diffuse goitre. FNAC is found to be the most effective tool for the evaluation of these lesion and helps to differentiate infective, inflammatory benign lesions to neoplastic and malignant lesions.

Aim & Objectives

The aim of the present study was to determine the epidemiological profile of various thyroid lesions Using fine needle aspiration cytology (FNAC) at our institute.

Material And Method

A retrospective study was conducted in Government Doon Medical college, Dehradun for the duration of June 2012 to June 2015. Total 251 cases were evaluated.

Result

The most common age group of presentation was 40-50 years with M:F -1:12.8 Out of total 251 cases of thyroid, FNAC revealed 222 cases (86.8%) as benign which comprises of 8 (3.18%)

Unsatisfactory lesion. colloid goitre 181 cases (72.1%) and lymphocytic thyroiditis 38 case (15.1%), 3 case (1.1%) each as follicular lesion of indeterminate significance, 9 cases (3.58%) were reported as follicular neoplasm, 2 (0.79%) as suspicious for malignancy, and 7 cases (2.78%) as malignant.

Conclusion

Benign thyroid swellings are the most common presentation for which FNAC is a single most effective sensitive tool for diagnosis of these lesions and highly effective in determining the nature of disease.

Keywords: Thyroid, FNAC, benign, malignant, Uttrakhand.

I. Introduction

Diseases of the thyroid gland are one of the commonest endocrine disorders in India as well as in the world. It is estimated that nearly 42 million people in India suffer from thyroid diseases (1). About 40% of the general population are affected by diseases of thyroid which may manifest with hypothyroidism, hyperthyroidism, cosmetic issues, and problems in other organs such as compression. The incidence of thyroid malignancy is about 2–4% (2). Therefore, the accurate evaluation of thyroid nodules is crucial. FNAC of these swelling considered to be the gold standard diagnostic test for the identification of benign and malignant thyroid lesion (3). It is the single most effective test for the preoperative diagnosis of thyroid nodular swelling thereby decreasing the rate of unnecessary surgery and when needed helps to determine the type and extent of the surgery (4).

II. Aim And Objective

The aim of this study was to determine the epidemiological profile of various types of thyroid diseases and an attempt to study efficacy of FNAC according to new Bethesda classification (5) at our centre.

III. Material And Method

A retrospective study was conducted in department of pathology, Government Doon Medical college, Dehradun for the period of 3 year (June 2012- June 2015). A total of 251 FNA from thyroid swelling were done during this period. Informed consent was taken from the patient. The records of these 251 patients who undergone FNA during study period were retrieved and information about age, sex and cytopathological

diagnosis were recovered (Corresponding histopathology were not available in most of the cases in our setup). Aspiration was performed using disposable 10ml syringe with 23G needle. To reduce contamination of specimen with blood not more than 2 – 3 passes were made and non-aspiration technique was used in some. Adequacy of cytological smear is judged by presence of 5 – 6 groups of well-preserved follicular cells, with each group containing 10 or more cells, according to Bethesda system of Classification of thyroid diseases. Minimum 3 smears were made for each case. Staining was done by Papanicolaou and Giemsa methods. Cytological smear were reviewed according to standard guide lines and diagnosis was according classified and correlated with age and sex. The data from the past 3 years were retrieved, compiled, summarised and analysed statistically using frequency distribution and percentage proportion.

IV. Result

In our study total 251 cases were included which were adequate for reporting, The age and gender wise distribution of total thyroid lesions are shown in Table(I&II).

Table (I): Age wise distribution of thyroid lesions

| Age group(years) | Total No of cases | Percentage(%) |
|------------------|-------------------|---------------|
| <20 | 25 | 9.9 |
| 21-30 | 48 | 19.1 |
| 31-40 | 45 | 17.9 |
| 41-50 | 64 | 25.4 |
| 51-60 | 41 | 16.3 |
| 61-70 | 23 | 9.1 |
| 70-80 | 05 | 1.9 |

The youngest patient was 8 years old and oldest of 78 years old. Most of the cases were from 21-50 years. The commonest age group of presentation was 40-50 years (Table I). Male to Female (M: F) ratio was -1:12.8(Table II).

(Table II): Male and Female distribution

| Gender | Total no of cases | Percentage(%) |
|--------|-------------------|---------------|
| Male | 18 | 7.1 |
| Female | 231 | 92.0 |

Out of 251 thyroid lesion 3.1% were unsatisfactory,86.8% benign,1.19% Undetermined ,3.58% Follicular neoplasm, 3.18% suspicious and 2.78% were positive for malignancy. These malignant neoplasm were further classified into Papillary CA (1.59%), Medullary CA(0.79%) and Anaplastic CA(0.39%). (Table III.)

Table(III) Distribution of various thyroid lesions according to Bathesda system

| Category | Diagnosis | Total number of cases | Percentage (%) |
|----------|---------------------------|-----------------------|----------------|
| 1. | Unsatisfactory | 08 | 3.10 |
| 2. | Benign | 222 | 86.8 |
| 3. | AUS/FLUS | 03 | 1.19 |
| 4. | Follicular neoplasm | 09 | 3.58 |
| 5. | suspicious for malignancy | 02 | 3.18 |
| 6. | Positive for malignancy | 07 | 2.78 |

AUS-Atypia Of Undetermined Significance, FLUS-Follicular Lesion Of Undetermined Significance

V. Discussion

FNAC provide a definite diagnosis of malignancy, with tumour type, enabling appropriate therapeutic surgery in one stage and for benign conditions can help the patients into those which potentially may require surgical as opposed to medical and endocrinological management or need surveillance. Nonetheless FNAC is the most reliable diagnostic tool in the management of patients with such lesion. Our study shows highest incidence of thyroid swelling in the 41-60 years of age group followed by 37.0% in the 21-40 years of age group. These results are comparable to the study done by Htwe TT, et al[6] found highest (45.2%) incidence of thyroid swelling in the 41–60 year age group, followed by 42.9% in the 21–40 year age group. In present study Female predominance is striking with M: F ratio was 1:12.8. These results are comparable to a study done by Hirachand S et al with M;F ratio was 12.3:1.(7) In this study the FNAC findings was as follows, 222 cases were benign (86.8%). Out of benign lesion most of the cases were of colloid goitre 72.1% followed by 15.1% cases of lymphocytic thyroiditis and 1.1% sub-acute thyroiditis. Neoplastic lesion constitutes 3.58% (9 cases) and malignant lesion 2.78% (7 cases). These results are similar to study conducted by Parikh U.R et al [8] studied

FNAC analysis showed 93.67% (207 cases) non-neoplastic lesions, 3.62% (8cases) neoplastic lesions and 2.71% (6 cases) malignant lesions. Studies conducted by other authors on thyroid lesions document various outcomes. The commonest lesion encountered in our study was Colloid Goitre (72.1%). Other studies also shows variable highest incidence of colloid goitre with variable results. Tilak et al (2002)(9) 50%, Naila Tariq et al(2007)(10) 56.9%, G.G. Swamy et al (2010)(11) 52%, Gunvanti et al (2012)(12) 55.7%, Richa Sharma(2012)(13) 43.3%,N.Kukur (61%)(14)Yogesh Pawde(2016)(15) 53.3%, present study (72.1%) . Papillary carcinoma of thyroid is the most commonly encountered neoplasm in our study which is similar to studies done by and Tabaqchali et al and shrivastava et al (16)(17).Similar finding has been reported by Ht we et al. Papillary carcinoma was commonest in their series, while anaplastic carcinoma had the lowest incidence.(18),(19)

VI. Conclusion

FNAC is firmly established as first line diagnostic test for the evaluation of goitre and single most effective test for the preoperative diagnosis of solitary thyroid nodule.It is highly efficacious in distinguishing between benign and malignant thyroid lesions. There was marked female predominance in all types of thyroid diseases.The Majority of thyroid lesions were benign presenting as simple goitre followed by chronic lymphocytic thyroiditis.Papillary carcinoma was the commonest malignancy encountered.

Bibliography

- [1]. Ambika Gopalakrishnan Unnikrishnan and Usha V. Menon Thyroid disorders in India: An epidemiological perspective Indian J Endocrinol Metab. 2011 Jul; 15(Suppl2): S78–S81. doi: 10.4103/2230-8210.83329 PMID: PMC3169866
- [2]. Kelley DJ. Thyroid, Evaluation of the solitary thyroid nodule. Medscape, 2011. emedicine.medscape.com/article/850823-overview (accessed January 2016).
- [3]. Pacini F, Schlumberger M, Dralle H, Elisei R, Smit JW, Wiersinga A. European consensus for the management of patients with differentiated thyroid carcinoma of the follicular epithelium. Eur J Endocrinol. 2006;154:787–803. [PubMed]
- [4]. Castro MR, Gharib H. Thyroid fine-needle aspiration biopsy: Progress, practice, and pitfalls. Endocr Pract. 2003;9:128–36. [PubMed]
- [5]. Guidance on the reporting of thyroid cytology specimens January 2016, Dr P Cross (Chair), Dr A Chandra, Dr T Giles, Dr S Johnson, Dr G Kocjan, Dr D Poller and Professor T Stephenson.Royal college of pathologist.
- [6]. Htwe T T, Hamdi M M, Swethadri G K, Wong J OL, Soe M M, Abdullah M S; Incidence of thyroid malignancy among goitrous thyroid lesions from the Sarawak General Hospital 2000–2004. Singapore Med J. 2009 Jul;50(7):724-8.
- [7]. Hirachand S1, Maharjan M2, Lakhey M1, Thapa R1, Kafle S Accuracy of fine needle aspiration cytology in diagnosis of thyroid swelling Journal of Pathology of Nepal (2013) Vol. 3, 433.
- [8]. 8.Pariikh U.R., Goswami H.M., Shah A.M., Mehta N.P., Gonsai R.N. Fine Needle Aspiration Cytology (FNAC) Study of Thyroid Lesions (Study of 240 Cases) GUJARAT MEDICAL JOURNAL / AUGUST-2012 Vol.67 No.2
- [9]. Tilak V, Dhaded AV, Jain R. Fine needle aspiration cytology of head and neck masses. Indian J Pathol Microbiol. 2002; 45(1): 23-30.
- [10]. Naila Tariq , Saleem Sadiq, Shahnaz Kehar, Muhammad Shafiq . Fine needle aspiration cytology of head and neck lesions- an experience at the JINNAH post graduate medical centre, Karachi. Pakistan J Otolaryngol 2007; 23: 63-65.
- [11]. G.G. Swamy, A Singh, JM Ahuja, N. Satyanarayana. Accuracy of fine needle aspiration cytology in the diagnosis of palpable head and neck masses in a tertiary health care centre. Journal of college of medical sciences – Nepal . 2010; 6(4): 19-25.
- [12]. Gunvanti B Rathod, Pragnesh Parmar . Fine needle aspiration cytology of swellings of head and neck region. Indian Journal of Medical Sciences. 2012; 66(3): 49-54.
- [13]. Richa Sharma, D.R.Mathur. Fine needle aspiration cytology (FNAC) of Palpable lesions of head and neck region.IJCRR 2012; 4(22):74-82.
- [14]. N Kukar, V Malhotra, M Saluja Analysis Of Fine Needle Aspiration Cytology Of Thyroid The Internet Journal of Pathology Volume 15 Number 1
- [15]. Dr. Yogesh Pawde, Role Of Fnac In Thyroid Lesions Global journal for research analysis Volume-5, Issue-3, March - 2016
- [16]. Tabaqchali MA et al. Thyroid aspiration cytology inNewcastle. Ann R Coll Surg Engl. 2000May;82(3):149-55.
- [17]. Srivastava CS, Saxena A Study of clinical and epidemiological profile of thyroid swelling International Journal of Medical research and review September, 2015/ Vol 3/Issue 8
- [18]. Htwe TT, Hamdi MM, Swethadri GK, Wong JO, Soe MM, Abdullah MS. Incidence of thyroid malignancy among goitrous thyroid lesions from the Sarawak General Hospital 2000-2004. Singapore Med J 2009;50:724-8. Year : 2014 | Volume : 17 | Issue : 3 | Page : 112-116 Spectrum of goitrous lesions in patients at a tertiary care center of Sikkim
- [19]. Subhabrata Sengupta, Isha Preet Tuli, Binayak Baruah, Santosh Prasad Kesari, Bhargav Ilapakurty, Amlan Gupta Spectrum of goitrous lesions in patients at a tertiary care center of Sikkim Sahel Medical journal Year : 2014 Volume : 17 Issue : 3 Page : 112-116.