www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i7.158

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Original Article

Fine Needle Aspiration Cytology (FNAC) of Thyroid Lump of Patients, Attending in Tertiary Care Hospital, at P.M.C.H., Patna

Authors
Dr Uday Shanker Pandey[1*], Dr Nawanita Kumari[2]
[1]Associate Professor, Department of Pathology, Patna Medical College, Patna
[2]M.B.B.S, M.D (PG Student), Department of Pathology, Patna Medical, College, Patna
*Corresponding Author
Dr Uday Shanker Pandey
Associate Professor, Department of Pathology, Patna Medical College, Patna, India

Abstract
Objective: *Fine Needle Aspiration Cytology (FNAC) is the most common modality for the diagnosis of thyroid lump or nodule. Present study was undertaken to evaluate the benign or malignant Pathology of thyroid swelling by the help of FNAC, of Patient attending in our hospital.*
Material and Method: *A total of 124 patients with midline neck swelling were send to our Department for Fine Needle Aspiration Cytology, from ENT OPD or IPD. After detailed history and clinical examination, FNAC was done under full aseptic precaution and 4-5 slides were prepared. After fixation, slides were stained with Giemsa and papanicolau stain and seen under low to high power magnification.*
Result: *Out of 124 patients, 110 (88.7%) were female and 14 (11.3%) patient were male. Female to male ratio was 7.85:1. 91 (82.72%) female were belongs to 31-50 year of age. Out of 124 cytological smear findings, 102 (82.25%) were benign in nature. Out of 102 smear which was benign or normal cellular morphology, 58 (56.86%) cases were diagnosed as nodular colloid goiter, 11 (10.78%) patients smear shows features of benign cystic lesion, 32 (31.37) patient were having simple colloid goiter and 1 (0.98%) patient showing hyper plastic thyroid nodular features. 20(16.12%) patients were suspicious because of presence of cellular atypia, while 2(1.61%) patients were malignant in nature.*
Conclusion: *Fine needle aspiration is on inexpensive and outdoor procedure. It can be performed under clinical setting and economy of the patients in our country. Moreover, there always a need to simplify the surgical procedure and to ensure that it should be done in the most effective manner, Particularly in India.*
Keywords: *FNAC, Thyroid, Malignant, Pap Smear, Stain.*

Introduction

Any abnormal mass or lump developing anywhere in the body especially on the exposed part gives an intense mental stress and anxiety to the patients and appear to cause of concern for both patient and concerned doctor. In this condition Fine needle aspiration cytology study plays an important role to evaluate the nature of nodule or lump (benign or malignant), because it is rapid, cheap and convenient interventional cytology method for both patients and doctors.

Thyroid nodule is one of the common condition where FNAC is most commonly used. As we have studied that thyroid gland is a butterfly shape that

sits low on the front of the neck and lies below Adam's apple along the front of the wind pipe. It's two right and left lobe connected by a bridge (isthmus) in the middle and weighs about 15 - 40 gms. in adult. The thyroid gland is unique among endocrine glands in that it is the first endocrine gland to appear in the fetus and largest of all endocrine glands which secrets iodine containing hormones, Thyroxine (T4) and Triiodothyronine (T3) which plays an important role in maintaining normal body's metabolism. While there synthesis and release are regulated by hypophyseal Thyroid stimulating hormone (TSH). Normally when the thyroid is in its normal size we can't feel it. Because of its site and location any abnormal swelling or growth in this region can easily be noticed by patient or detected by the examiner during general physical examination, which needed to evaluate the nature of growth as soon as possible, so further management can be initiated before life threatening complication started.

The first report of needle biopsy dates back to the 11th century in the text of the Arab doctor Abulcaris. Which has been further expanded and Dudgeon was the first to establish aspiration biopsy on a scientific basis while Martin Ellis applied needle biopsies on a wide range of samples and clinical cases. The study has been further expanded and now FNAC has become common outdoor procedure for evaluation.

Here our aim is FNAC study of thyroid nodule of patients being sent in Pathology department from Out Patient Department or Indoor Patient Department to evaluate the nature of swelling whether benign or malignant and prevalence of Thyroid disease in Patna and nearby rural areas.

Material and Method

Present study was carried out in the Department of Pathology, Patna Medical College, Patna, with the help of Department of ENT, during the period of July 2014 to August 2016.A total of 124 patients of thyroid swelling were studied, from which FNAC was done for cytological study.

A detailed history of patient was noted regarding age, sex, duration of swelling, any pressure symptom, shape of the swelling, whether solitary nodule or multi -nodular, size of the nodule, feeling of nodule soft, firm or Hard, any prominence of vessels and also mobility of nodule including movement on deglutition.

FNAC was done under full aseptic precaution by placing the patient in supine Position and holding the nodule between thumb and index finger using 22 - 25 gauze disposable needle attached to the disposable plastic syringe after taking consent from patient. After aspiration 4 -5 slides were prepared which is then placed in ethanol for fixation. The slides were later subjected to Giemsa stain and Papanicolau stain. After staining slide were viewed under low power to observe the cellularity either Hypocellular or Hypercellular, arrangement of cells e.g monolayered sheet, microfollicular or macrofollicular and then shifted to high power. Detailed study was done regarding nature of cells, nuclear cytoplasmic ratio, nuclear size border, chromatin pattern, presence or prominence of nucleoli and also presence or absence of atypical mitosis.

Result

Out of 124 patients, 110 Patients (88.7%) were female and 14 patients (11.3%) were male. Out of 110 female patients 91 (82.72%) patients were between the age group of 31 - 50 years, 17 (15.45%) patients were between 51- 60 years while 2 (1.81%) patients were above 60 years. Majority of the patients 102 (82.2%) were present with the complain of swelling in midline neck region, while 20 (16.1%) patients were giving history of pain in the swelling and 2(1.61%) patients were giving history of swelling and pain along with difficulty on swallowing. These 2 patients were above the age of 60 years.

Out of 124 patients FNAC smear findings suggests that 102 (82.25%) cases were benign in nature, based on the normal cellular morphology. Out of 102 patients, 58 (56.86%) patients were diagnosed as having nodular colloid goiter where

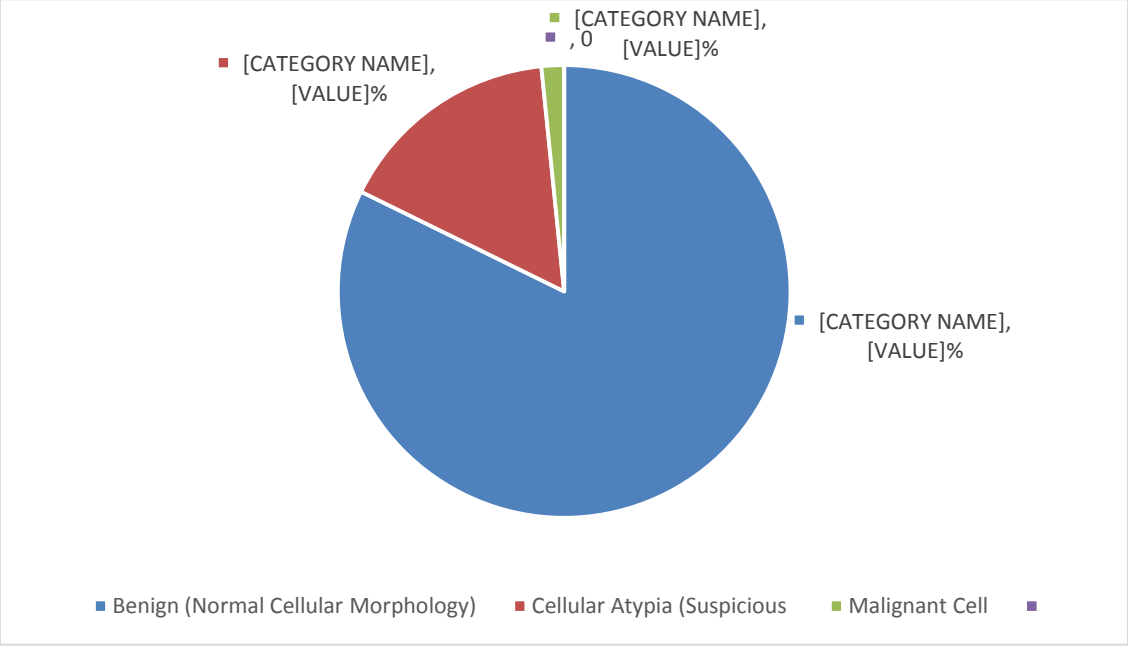
smear shows abundant thick and thin colloid with moderate number of follicular epithelial cells mixed with occasional hyperplastic involution type follicular epithelial cells with a few histiocytes. 11 (10.78%)patients smear were showing features of benign cystic lesion containing coffee brown fluid, many foamy cells, some with ingested Debris and degenerative changes. 32 (31.37%) patients were having simple colloid goiter. 1 (0.98%) patients smear were showing hyperplastic thyroid nodule features, showing larger follicular cells with abundant vacuolated cytoplasm along with marginal vacuoles.

While 20(16.12%) patients smears were suspicious because of presence of cellular atypia. While 2 (1.61%) patients were between 50 - 70 years were diagnosed as malignant lesion on the basis of smears showing hyper cellularity with syncytial aggregates and sheets of cells showing enlarged ovoid pale nuclei and in some cases hyper chromatic nuclei exhibiting multiple nucleoli, intracytoplasmic inclusions, dense cytoplasm and indistinct cell border. However all the suspicious cases and malignant cases diagnosed by FNAC were advised for excisional biopsy histopathological examination for confirmation of diagnosis.

Table-1 Pap-Smear (Cytological) Finding

Pap-Smear Finding (n=124)		No. of Patients	Percentage
Benign (Normal Cellular Morphology)	Nodular colloid goiter (n=58) 56.86%	102	82.25%
	Benign cystic Lesion (n=11)10.78%		
	Simple colloid goiter (n=32) 31.37%		
	Hyper plastic thyroid Nodule (n=1) 0.98%		
Cellular Atypia (Suspicious Smear)		20	16.12%
Malignant Cell		02	1.61%

Pie Chart Showing Pap-Smear (Cytological) Finding



Discussion

In present study, a total of 124 patients, we have observed that thyroid pathology is more common in female patient 88.7% as compared to male 11.31%. The incidence is more prevalent between age group of 31 - 40 years. We have also observed that commonest mode of presentation is swelling in the region of thyroid in anterior of neck (78%) followed by pain (18%) in the swelling and history of difficulty in swallowing (7%). Also cytological 82.25% patients were having benign

swelling, out of 102 patients Nodular colloid goiter comprises 56.86%.

These findings are in accordance of findings of Suresh et al who found out of 89 patients, 60 patients were female (67.4%) with mean age of 38.5 years. These findings are also comparable with the findings of M. Tarique et al that the mean age of in years of the study subjects was 35 year. The commonest mode of presentation was swelling in the region of thyroid in midline neck (76%) is also in accordance with the findings of M. Tarique et al study where painless swelling in the neck (60%) was the commonest complain.

on the basis of FNAC findings that nodular colloid goiter and other benign thyroid disease are more common in females between the age group of 31 - 40 years. The incidence of malignancy increases with increasing age of patients as we have were observed that in 20 patients between the age group of 40 - 50 years, whose FNAC smear was suspicious while 2 patients in the age group of 50 - 70 years whose smear was showing clear cut cytological features of malignancy.

Conclusion

FNAC is an important mode of evaluating the nature of thyroid nodule and also lump in the other part of the body. It also plays an important part in relieving the anxiety, burden of surgery and medical expenses. However the accuracy of FNAC findings increases with repeated study and experiences of cytologist.

References

1. Werner Sc. Historical resume in Braveman (E, utiger RD(eds); The thyroid : A fundamental and clinical text, 6th edition. Philadelphia, TB Lippincott; 1991: chapter 1:3-6
2. Suresh kumar, Shakil Aquil, Abdullah pahar, Role of Fine needle aspiration cytology in thyroid disease, Journal of Surgery Pakistan (International) 13(1) January — March 2008
3. Dr. Muhammad Tariq, FNAC of thyroid nodule; Diagnostic Accuracy of Fine Needle Aspiration Cytology, professional Med, Dec 2010; 17(4):589-597
4. Larry Jameson.J, Anthony P.Weetman. Disease of the thyroid gland, Harrison's Principle of Internal Medicine, vol.2, 18th edition, 2012; 2104 — 2125
5. Ashcraft MW, Van Herle AJ, 1981 Management of thyroid nodules, 1; Physical examination, blood tests, X-ray tests 8‘. ultrasonography, Head Neck Surgery 3; 216- 230
6. Castro MR, Gharib H, 2003, Thyroid Fine Needle Aspiration biopsy: Progress, Practice and Pitfalls Endocr. Pract 9: 128 — 136
7. Carpi A, Sagri penti A, Nicotine et al 1998. Large needle aspiration biopsy for reducing the rate of inadequate cytology on fine needle aspiration specimen from palpable thyroid nodule. Biomed Pharmacother 52 : 303 — 307.
8. A Diamahtis et al. Fine needle aspiration(FNA) biopsy: historical aspects folic histochemica Et Cytobiologica vol. 47, no. 2, 2009 : 191 — 197
9. Kaplan MM. Evaluation of Thyroid Nodule by needle aspiration. In Braverman LE, utiger RD editors, The Thyroid, 8th edition, Philadelphia: Lippincott Williams and Wilkins 2000 : 441 — 451
10. Namou Kim, Pierre Lavertu. Evaluation of a Thyroid nodule. Disorders of the Thyroid. otolaryngol Clin N Am 2003; 36: 17 — 33.
11. Pepper GM, Zwickler D, Rosen Y. Fine needle aspiration biopsy of the thyroid nodule. Arch Intern Med 1989;149:594-6
12. Cramer H. Fine needle aspiration cytology of the Thyroid. An appraisal. Cancer Cytopath 2000;90:325-9
13. Kini SR. Techniques of Fine needle aspiration biopsy. In: Guide to clinical

aspiration cytology: thyroid. Newyork: Igaku-Shoin:1987.p.5 — 12.
14. Surgical pathology by Rosai and Ackerman's -9th edition
15. Pathological basis of disease — Robins and Cotran(8th edition)
16. Text book of Pathology — By Harsh Mohan (6th edition).