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ORIGINAL ARTICLE

Fine Needle Aspiration Cytology of Thyroid Gland in Tertiary Care Unit

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ABSTRACT

Objective: The aim of our study was to determine the reliability of preoperative FNAC diagnosis of thyroid gland swelling in pathology Department BMSI, JPMC (Jinnah Postgraduate Medical Centre) Karachi.

Study design & place: cross-sectional study was conducted at Pathology BMSI, JPMC during January 2022 to 30th June 2022.

Material and Methods: Total 200 patients of thyroid FNA aspiration cytology were evaluated in FNA OPD All smears and cellblock stained with eosin and hematoxylin. Data was analyzed by using Statistical Package for Social Sciences version 25 (SPSS 25).

Results: FNAC findings were classify as benign,malignant ,cystic and inflammatory lesions. Out of 200 cases,173 patients were female and 27 were male(female to male ratio was 8.9:1.68) .all cases were diagnosed according to Bethesda system .and benign lesions predominantly hyperplasia followed by cystic lesion were commonest finding .5 neoplastic lesions and one metastatic lesion

Conclusion: Hyperplasia and benign lesion with cystic changes are commonest finding and predominant in females suggestive of neoplastic lesions are helpful for treatment plan of patients.

Keywords: FNAC Fine needle aspiration cytology JPMC Jinnah Postgraduate Medical Centre Hyperplasia cystic lesion metastatic carcinoma

INTRODUCTION

Fine needle aspiration cytology is easily performed diagnostic procedure that used to sample cells from the thyroid gland for microscopic examination .this test is used in the diagnostic evaluation of thyroid masses also known as nodules or when there is suspicion of thyroid cancer.[18]Fine needle aspiration cytology of thyroid swelling has been introduced as the most reliable and cost effective method for diagnosis of clinically important thyroid disorders .Find needle aspiration cytology of thyroid swelling is an excellent first line method as a pre-operative investigation of thyroid swelling showing the nature of lesion .it is a and safe minimally invasive procedure .[1]it is introduced as Diagnostic tool and correlate with the finding of tissue biopsyduring the last two decades .FNAc has emerges as the most reliable and cost effective method in the diagnosis and management of clinically important disorders of thyroid ,4 to7% of adults have palpable enlargement of thyroid.10 times more have the impalpable nodules. most common in female and also the people with having the history of radiation to the head and neck.[2]Different types of the studies show the 2 to 5% of the FNACS are insufficient 50 to 70% benign and 15 to 30% suspicious and 5 to 10% malignant. these are the different variations of the different kind of studies. [3]

Rationale of the study: The rational of our study to evaluate the preoperative diagnosis of thyroid swellings with correlation of clinical provisional diagnosis

MATERIALS AND METHODS

Total 200 patients of thyroid FNA aspiration cytology were evaluated in FNA OPD, the patients having a solitary or multiple thyroid nodule and some with diffused swellings. FNA was performed with 10cc needle guage syringe, smear and cell block was prepared, cystic fluid was aspirated from cystic lesions and centriguged before smearing. single slide was staind with diffquick stain and adequacy of diagnosed material was observed, inadequate smear was re aspirated. All smears and cellblock stained with eosin and heamatoxycllin. Data was analyzed by using Statistical Package for Social Sciences version 25 (SPSS 25).

Study design & setting: A hospital based cross-sectional study was conducted at FNA OPD of Pathology BMSI, JPMC, Karachi.

Sample size: 200.Sample size was calculated by open EPI

Inclusion criteria: All patients referred from medical and surgical units with clinical history of thyroid swelling and report of thyroid scan and thyroid profile.

Exclusion criteria: Hyperfunctional thyroid nodule Other lesion of neck

Data collection was randomized sampling Data was analysed on spss version 25

Ethical Considerations: The research protocol was reviewed and approved by institutional review board (IRB) of Jinnah postgraduate medical centre Karachi. Written informed consent was also taken from study participant before enrollment in the study. It is also clearly mentioned that participation was voluntary and every participant has liberty of withdrawing any time from the study.

RESULTS

FNAC findings were classify as beningn, malignant ,cystic and inflammatory lesions. Out of 200 cases, 173 patients were female and 27 were male(female to male ratio was 8.9:1.68) .

During our study periods out of 200 patients female patients were between 3rd and 4th decades followed by 5th decades. male patients were also common in 4th and 5th decades. Male to Female ratio was 8.9:1.68 (table 1)

Total 89(44.5%) cases were hyperplasia.44(22%)were cystic lesion,32(16%)were benign lesions with cystic changes ,9(4.5%)cases were diagnosed as follicular lesions.05(2.5%)were neoplastic lesions 03 were papillary ca ,two were follicular ca. 01 (0.5%) was metastatic carcinoma .6 (3%) were labelled as colloidal cysts with paucity of cells and 5(2.5) were diagnosed as inconclusive due to lack of cellular element despite thrice attempt .08(4%) cases were diagnosed as hashimotos thyroiditis and 01(0.5%) was de quervain thyroiditis. (table 2).

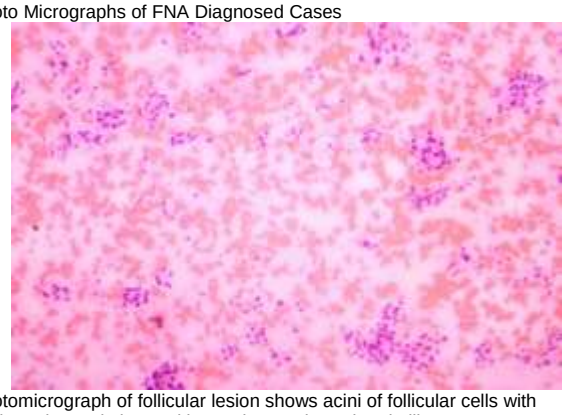
Table 1: Distribution of Cases with respect to Age and Gender

S. No	Age Group	Number of Cases (Male)	Number of Cases (Female)
1	10-20	1	11
2	21-30	4	46
3	31-40	9	66
4	41-50	7	37
5	51-60	3	15
6	61-70	2	3
7	71-80	1	0
Total number of Cases		27	173
Total Number of Cases (Both Male and Female) 200			
Female to Male Ratio			8.9:1.68

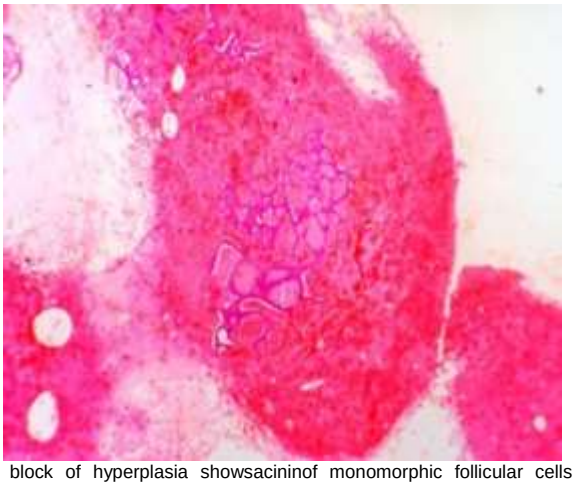
Table 2 .Frequency of Commonest Diagnosis of Salivary Gland Swelling

Diagnosis of Salivary Gland Swelling			
1	Hyperplasia	44.5%	89
2	Cystic lesion	22%	44
3	Benign lesion with cystic changes	16%	32
4	Follicular lesion	4.5%	9
5	neoplastic lesion	2.5%	5
6	Colloidal cyst	3%	6
7	Metastatic lesion	0.5%	1
9	Hashimotos thyroiditis	4%	8
10	Dequervain thyroiditis	0.5%	1
11	Inconclusive	2.5%	5
Total number of cases 200			

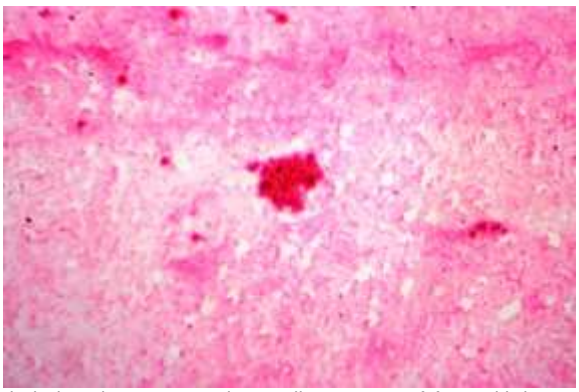
Photo Micrographs of FNA Diagnosed Cases



Photomicrograph of follicular lesion shows acini of follicular cells with nuclear size variation and hyperchromasia Bethesda iii



Cell block of hyperplasia showsacininof monomorphic follicular cells in colloidal back ground



Cystic lesion shows scattered as well as groups of foamy histiocytes in colloid mixed hemorragic back ground

DISCUSSION

During our study time we aspirated 200 cases of thyroid swelling in our routine FNA OPD most of the patients were female between the age of 13 TO 60 and the male patients were between the age of 17 TO 80 years. age group wasmost common in second, third and fourth decades. mostly the patients were presented with solitary nodule or diffused swelling of either single lobe, both lobes or asthmus.on ultrasound cases were labelled as multinodular goiter,complex nodule with cystic changes.or neoplastic lesions.[4]

in our study the most common finding is hyperplasia in 44.5% cases. Smear shows groups and sheets of monomorphic follicular cells and scatterd foamy histiocytes and hurthle cell changes in colloid mixed heamorrahgic back ground. we diagnosed these cases as hyperplasia /hyperplastic nodule Bethesda ii ,16% cases shows small groups of monomorphic cells with numerous foamy histiocytes or hemosiderin laden macrophages and cases were diagnosed as beningn lesions with cystic changes,Bethesda ii.[5].The cystic changes seen in 22% of cases and smear shows foamy histiocytes,pigment laden macrophages and scattered follicular cells in colloidal back ground labelled as cystic lesion Bethesda I.[6].4.5%cases shows groups and acini of follicular cells with nuclear pleomorphsm,hyperchromasia and scanty colloid were diagnosed as follicular lesions Bethesda iii.2 case (1%) shows acini of bizarre nucli of follicular cells in hemorrhagic back ground was labelled as suggestive of follicular carcinoma .confirmation of capsular invasion or vascular invasioncannot be possible on FNAC there for excisional biopsy was advised to exclude the possibility of follicular carcinoma Bethesda iii.[7]1.5% cases shows groups and papillary pattern of follicular cells with nuclear clearing,overlapping and grooving were diagnosed as suggestive of papillary carcinoma bethesda iii.[8]. Excisional biopsy was advised for definitive diagnosis these all cases were on ultrasound labelled as complex nodule or neoplastic lesion.[9]. .3% cases shows only colloid without cellular element and labelled as colloidal cyst Bethesda I .05 cases despite thrice aspiration not shows cellular element therefore labelled as inconclusive and excisional biopsy advised for definitive diagnosis.[10].4% cases shows groups of follicular cells admixed with moderate to dense lymphocytic infiltrate and scattered foamy histiocytes these cases were labelled on ultarasound as thyroiditis and diagnosed on FNAC as hashimotos thyroiditis,clinical correlation was advised.[11] Single case shows clusters of epitheloid cells ,histiocytes, lymphocytes and groups of follicular cells in hemorrhagic and colloidal back ground was diagnosed as dequervein thyroiditis clinical correlation was advised. [12] One cases shows groups of malignant cells looking other than follicular cells in heamorragic back ground ,this case was labelled as neoplastic lesion on ultrasound and on FNAC this case was diagnosed as metastatic lesion Bethesda iv.[13]

CONCLUSION

Hyperplasia and benign lesion with cystic changes is commonest finding and predominant in females suggestive of neoplastic lesions are helpful for treatment plan of patients.

Recommendation. Largescale studies with histopathological correlation of FNA diagnosis is advised.

Conflicts of interest. No any conflict of interest

Funding. self

Ethical Approvalwas taken from institutional review board committee JPMC Karachi

Limitation: Short time duration single unit study without Histopathological correlation.

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