Adequacy and Accuracy of Fine Nedle Aspiration Cytology of Papillary Lesions of the Breast with its Histopathological Correlation: A Two Year Study from a Tertiary Care Centre

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ABSTRACT

Introduction: The cytodiagnosis of papillary breast lesions poses many difficulties due to overlappinging of similar features observed in other breast lesions that produces papillary like tissue fragments. Study aimed to see the adequacy of fine needle aspiration cytology of papillary lesions of the breast with its histopathological correlation.

Material and methods: Retrospective study of the cytology smears reported as papillary lesions on FNAC and on histopathological examination of seven cases over a period of two years from June 2014 to May 2016 in Assam Medical College Dibrugarh were studied and correlated.

Result: All the patients lied in the age group of 40 -60 years and the main presenting complain was lump in the breast. All the May-Grünwald-Giemsa, stained smears of FNA revealed predominantly highly cellular smear comprising of tight cohesive clusters and few cells dispersed singly. Numerous finger like papillary projections were also seen. The histopathology reports of all the seven cases confirmed it to be the papillary lesion of breast.

Conclusion: On aspiration cytology many other nonpapillay breast lesions exhibit overlapping features on cytosmears. Cytomorphological features alone are inadequate for the precise diagnosis of the papillary lesions of the breast.

Keywords: Fine Nedle Aspiration Cytology, Papillary Lesions, Breast, Histopathological

INTRODUCTION

Papillary carcinoma of breast comprises 1-2% of all breast tumours and hence is a rare entity.[1] The diagnosis is often difficult because of different clinical and radiological features. Pathological diagnosis is conclusive.It is a difficult task to interpret the papillary lesions of the breast cytologically fibrocystic disease, duct papilloma, papillary or micropapillary ductal carcinoma and pseudopapillary pattern in invasive ductal carcinoma (not otherwise specified) three-dimensional papillary clusters can be seen in a breast aspirate. Hence to analyse these wide variations papillary lesions were studied cytologically and histopathologically and were correlated. Thus we carried out a study to evaluate the utility of individual morphological features and offer a more precise cytodiagnosis of papillary lesions. The cytodiagnosis of papillary neoplasms of the breast continues to be one of the difficult areas of diagnosis. Pseudopapillary structures and high cellularity encountered in many nonpapillary lesions leads to interpretation errors. In an attempt to identify more reliable cytological criteria for the diagnosis of papillary lesions of breast this retrospective study was carried out.[2] Current research aimed to study the adequacy of fine needle aspiration cytology of papillary lesions of the breast with its histopathological correlation

MATERIAL AND METHODS

Study was conducted in the Department of Pathology, Assam Medical College and Hospital, Dibrugarh. Seven cases reported as papillary lesions on nipple discharge and were selected on the basis of a predesigned and preformed proforma. Time of study was from June 2014 to May 2016.

Inclusion criteria: All palpable female breast lesions with discharges

Exclusion criteria: Non palpable breast lesions in both male and female

Methodology

Fine needle aspiration cytology (FNAC) and histopathology were studied and correlated. The cytology slides [May-Grünwald-Giemsa (MGG) and hematoxylin and eosin (H and E)-stained slides] and H and E-stained histopathology slides were retrieved from the files and a retrospective comparative analysis was carried out.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the statistical analysis. Descriptive statistics like mean and percentages were used for the interpretation of data.

RESULTS

Fine needle aspiration cytology (FNAC) and histopathology were studied and correlated. The cytology slides [May-Grünwald-Giemsa (MGG) and hematoxylin and eosin (H and E)-stained slides] and H and E-stained histopathology slides were retrieved from the files and a retrospective comparative analysis was carried out. Figures 1, 2 shows cytologically finger like projection with fibrovascular core and histopathologically shows papillary fragments with fibrovascular core. Assessment criteria for evaluating cytosmears (Table-1) was used to assess the results.

As seen in Table-2, Six out of seven FNAs were from histologically proven papillary neoplasms papillary carcinoma[4], and intraductal papilloma.[2] We also reviewed 1 FNA in which a

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How to cite this article: Aparna Dutta, Reena Kouli, Ranu Shukla. Adequacy and accuracy of fine nedle aspiration cytology of papillary lesions of the breast with its histopathological correlation: a two year study from a tertiary care centre. International Journal of Contemporary Medical Research 2017;4(2):446-448.

papillary neoplasm was suggested by cytology but not confirmed by follow-up biopsy which was ductal carcinoma in situ.

DISCUSSION

The cytodiagnosis of papillary neoplasms of the breast continues to be one of the difficult areas of diagnosis. Pseudopapillary structures and high cellularity encountered in many nonpapillary lesions leads to interpretation errors. In an attempt to identify more reliable cytological criteria for the diagnosis of papillary lesions of breast this retrospective study was carried out.[2]

Papillary lesions of the breast constitutes <2% of all breast carcinomas and includes a wide spectrum of benign and malignant entities.[3] Variations in clinical and radioloical presentations of these lesions causes diagnostic difficulties. Clinically the papillary lesions present as palpable mass or with nipple discharge and sometimes these clinical features may not be evident. Multiple bilateral lesions of varying sizes with or without microcalcifications is seen in mammogram. In ultrasound of these lesions a complex intracystic lesion or a homogenous solid lesion is seen.[4] However, even though these lesions are identifiable in ultrasound and mammogram, such detections are not sensitive enough to accurately differentiate malignant and benign papillary tumors.[4]

Numerous detached fronds, single columnar cells and discohesion, was only observed in papillary carcinoma and intraductal papillary carcinoma. In addition, the papillary fragments of intraductal papilloma were morphologically different from those ofpapillary carcinoma. Higher degree of complexity is exhibited, numerous thin fronds flowing in different directions and a the lining epithelium shows disordered arrangement. High nuclear to cytoplasmic ratio, nuclear hyperchromasia and slight to moderate atypia was noted in all cases. However after very careful research, irregularity of nuclear contour was seen.[5,6] Various studies have been conducted to describe the distinctive cytological features of benign and malignant papillary lesions of the breast.[7,8]

Based on our findings,if the samples are optimal on FNA papillary carcinoma and intraductal papilloma with or without atypia can be accurately classified. Criterias used to classify these papillary breast lesions are summarized in Table 1. Smears of papillary carcinoma were highly cellular while those of intraductal papilloma were moderate to low in cellularity and diluted with blood.In addition the atypical papillomas makes the distinction from carcinoms difficult as they present with high cellularity with complex papillae and single atypical cells.

Padel et al showed that when pathologists took the samples for cytodiagnosis sensitivity of FNAC increasd and collection of inadequate samples decreased.[9] Cohen et al and Ljung et al also

Parameters	Assessment and quantificaton	
Cellularity	Low	+
	Moderate	++
	High	+++
3-d clusters	Present	+
	Absent	++
Cyst macrophages	occasional	+
	Few	++
	numerous	+++
Stromal bare nuclei	occasional	+
	Few	++
	numerous	+++
Cellular atypia	Low	+
	moderate	++
	High	+++

Table-1: Assessment criteria for evaluating cytosmears

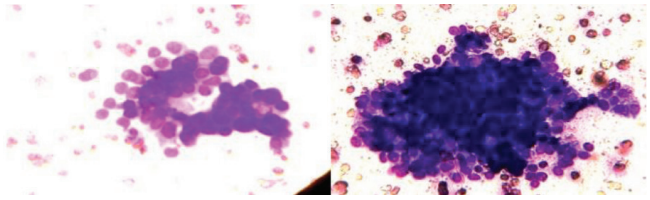

Figure-1: A and B 40x-cluster showing finger like projection with fibrovascular core

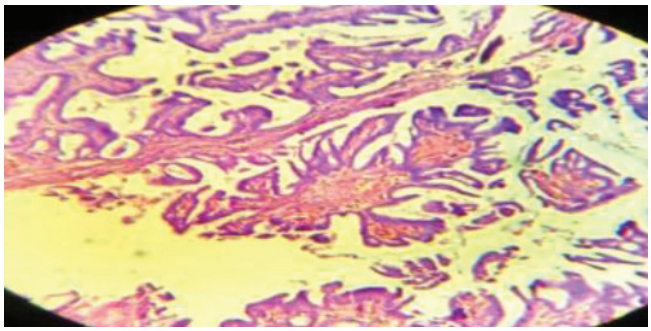

Figure-2: 10x-histology image of papillary carcinoma

Age	Cytodiagnosis	Cellularity	3D Clusters	Cyst macrophages	Bare nuclei	Atypia	Histological diagnosis
48	Papillary carcinoma	+++	+	-	-	+++	Papillary carcinoma
52	Papillary lesion	++	+	+	+	---	Intraductal papilloma
53	Suspicious of papillary cacinoma	+++	+	-	--	++	Papillary carcinoma
60	Papillary neoplasm, favor papilloma	+++	+	-	++	--	papilloma
42	Papillary carcinoma	+++	+++	-	-	+++	Papillary carcinoma
56	Papillary carcinoma	+++	++	+	-	++	Invasive papillary carcinoma
65	Papillary neoplasm	++	+	+	-	+	Ductal carcinoma in situ

Table-2: Showing cyto and histopathological diagnosis

reported the influence on sensitivity when an untrained person performed the aspiration and sensitivity values dropped sharply from 98.2% to 75% thus training and experience in aspiration cytology of the breast improves the FNA yield and better diagnostic results.[10,11] Several studies[12-15] have shown that most papillary lesions can be diagnosed by FNA.

CONCLUSION

Papillary breast lesions are rare and constitute less than 10% of benign breast lesions and less than 1% of breast carcinoma. Aspiration cytology for papillay breast lesions exhibit overlapping features on cytosmears. If aspiration is done properly and in all the sites, it can yield very sensitive results.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 28-01-2017; **Published online**: 11-03-2017