Original Research Paper

Pathology

CYTOLOGICAL GRADING OF BREAST CARCINOMA- USING TWO GRADING SYSTEMS.

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ABSTRACT FNAC is a standard procedure done for diagnosis of carcinoma breast. This procedure can be further utilized for prognostication of breast cancers before surgery by adding cytological grading system in routine reporting. There are many grading systems for carcinoma breast cytological grading but the most reliable and effective method is not yet determined. In this one year prospective study done over 74 cases of infiltrating ductal carcinoma breast we aim to compare Robison's and Mouriquand's cytological grading systems. In this study a high degree of concordance was observed between the two grading systems with a highly significant relationship (p=0.001), but we found Robinson's cytological grading system to be easier for using in routine practice.

Introduction:

Incidence of breast cancer has shown a striking rise in india and worldwide. Exceeding the incidence of cervical cancer which was earlier the most common malignancy, Breast cancer has emerged as the most common cancer diagnosed in Indian women.[1] During 2008-2012 there has been a rise in incidence of breast cancers by 11.54% and it's related mortality by 13.82%. [2,3] Another worrisome factor is that in india breast cancers are being diagnosed a decade earlier as compared to other parts of the world. [4-7]

On diagnosis of breast cancer one the main concern for both doctor and the patient is prognosis of disease. Amongst breast cancer patients a five-year realapse free survival varies from 65-80% [8] and a ten year survival varies from 55-96%.[9] Hence breast cancer is a disease of variable prognosis.

One of the less explored prognostic factor is cytological grading. This can be readily done on the FNAC material obtained and it can provide valuable information about prognosis of the disease, apart from making a diagnosis of malignancy and typing. [10,11]

In this study we aim to study and compare two cytological grading systems namely Robinson's and Mouriquand's grading methods.

Material and Methods:

It is a one year prospective study done between July 2018- June 2019. Out of total 86 cases diagnosed with carcinoma breast on FNAC, 74 cases of infiltrating ductal carcinoma were graded using Robinson's (Table 1) and Mouriquand's (Table 2) cytological grading systems after staining smears with H&E and giemsa. Followed by comparison of the results obtained by the two systems.

Table 1: Robinson's cytological grading system [12]

CRITERION	SCORE 1	SCORE 2	SCORE 3
Cell dissociation	Mostly clusture	Single cells,clusture	Mostly single cells
Nuclear size	1-2 times size of RBC	3-4 times size of RBC	>/=5 times of RBC
Cell uniformity	Monomorphic	Mildly pleomorphic	Pleomorphic
Nucleoli	Indistinct /Small	Noticeable	Abnormal
Nuclear margin	Smooth	Slightly irregular/folds	Buds, clefts
Chromatin pattern	Vesicular	Granular	Clumping/clearing

Grade I : Score 6-11	Grade II : Score 12-14	Grade III :Score 15-18

Table 2: Mouriquand et al Grading System [13]

Features		Score
Cells	Isolated	3
	In clusture	0
	Large size	3
	Anisokaryosis	2
	Naked	3
Nuclei	Budding	2
	Hypochromasia	3
	Hyperchromasia	2
Enlarged Nucleoli	Red	3
	Blue	2
Mitosis	>3/slide	1
	>6/slide	3

Grade I: Score < 5   Grade II : Score 5 – 9   Grade III : Score > 10

Result:

Out of 86 cases of breast cancers diagnosed by FNAC in our institution, 74 cases of infiltrating ductal carcinoma were evaluated using two cytological grading systems- Robinson's and Mouriquand's. According to Robinson's cytological grading system 19(25.67%) cases were grade I, 29(39.18%) cases were grade II and 26(35.13%)cases were grade III whereas according to Mouriquand's grading system 18(24.32%) cases were grade I, 28(37.83%)cases were grade II and 28(37.83%)cases grade III . (Table 3)

Amongst the scores obtained using the two systems a highly significant relationship was observed (p value=0.001) and a high degree of concordance was observed (90.54%).

Table 3: Comparison of Robinson's and Mouriquand's grading

Mouriquand's grading	Robinson's grading			
	1	2	3	Grand Total
1	16	2	0	18
2	3	25	0	28
3	0	2	26	28
Grand Total	19	29	26	74

Discussion

Grade of carcinoma breast indicates it's prognosis, lower grade cancers are slow growing whereas higher grade means are aggressive.[14] Knowledge of grade of cancer prior to surgery has implications, such as providing better treatment for patient. Neoadjuvant therapy is usually done for early breast cancer, so adding grade of tumor in the FNAC report is desirable, also overtreatment of low grade cancers can be avoided[15,16].

Another benefit of knowledge of carcinoma breast grading is that it

allows researchers to stratify and include patients in experimental studies. [17]

Lobb et al[18] in their study revealed that more than 90% women who were diagnosed with early breast cancer desired to know about the probability of cure. This can be provided with cytological grading when they undergo FNAC, which is a part of intial workup of carcinoma breast.

The National cancer institute recommended that reports of FNAC breast where carcinoma is diagnosed grade of tumor should be added [19].

In our study 19(25.67%), 29(39.18%) and 26(35.13%)cases were grade I,II and III respectively according to Robinson's cytological grading system whereas according to Mouriquand's grading system 18(24.32%) , 28(37.83%), 28(37.83%) cases were I, II and III respectively . Mximum number of cases were in grade II followed by grade III. Our study is in concordance with the study done by Wani et al[20] , in their study according to Robinson's cytological grading system 25.45%, 41.81%,32.72% cases were graded as I,II,III respectively and according to Mouriquand's grading system 25.45%, 38.18% and 36.36% cases were graded as I,II and III respectively.

In the present study concordance rate between the two grading systems was found to be 90.5%. Concordance rates between these two systems were found as 90.9% and 76.9% in studies of Wani et al[20] and Das et al[21].

Das et al[21] stated that they preferred Robinson's cytological grading system because of it's simplicity and specificity. Wani et al[20] stated that criteria used in Robinson's cytological grading system are more objective with better reproducibility.

Conclusion:

Using FNAC only for diagnosis of breast cancer or its morphological typing is an under-utilisation of the procedure. FNAC is a very commonly done for any breast lump and in carcinoma cases it can also provide grade of cancer which can indicate the prognosis and help in deciding treatment protocol, using the same material which is used for diagnosis of carcinoma breast without any additional expenses or resources. Although both Robinson's and Mouriquand's cytological grading system have high concordance but criteria used in Robinson's grading system are simpler and can be added in routine reporting with ease.

Fig 1: FNAC Ductal carcinoma breast (Grade I) : Malignant cells arranged in clusture with Vesicular chtromatin, mild pleomophism and size 1-2 time that of RBCs. H&E 400x
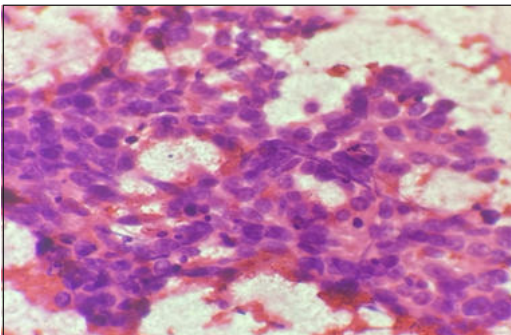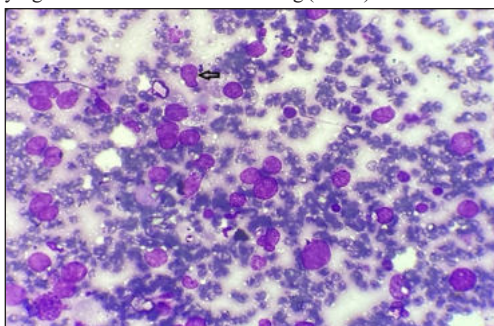

Fig 2: FNAC Ductal carcinoma breast (Grade III) : Malignant ductal cells lying islolated with nuclear budding (arrow). MGG 400x

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