



Correlation Between Robinson Grading of Cytology and Eleston & Ellis Modified Bloom-Richardson Grading of Histopathology in Cases of Breast Carcinoma (A Study of 65 Confirmed Cases)

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ABSTRACT

Introduction: Fine needle aspiration cytology is most commonly performed preoperative diagnostic modality. Histopathological grading is an important prognostic factor for breast carcinoma. Aim of this study is to determine correlation between grade of cytology and histopathology in breast carcinoma. Method and Material:65 cases were studied. After taking fine needle aspiration, smears were stained with haematoxylin & eosins stain and papanicolau stain .The cytological grading was done by using Robinson’s grade. In histopathology ,sections were stained with haematoxylin& eosins and grading was done by bloom-Richardson’s grade.Result: overall 84.61% concordance is seen between cytological and histopathological grades. In context of grades 76.92%,84.85%,89.47% concordance is seen in grade I, II and III respectively. Highest concordance is seen in grade III.Conclusion: Significant correlation is observed between cytology and histopathology grading of carcinoma breast. Robinsons cytological grade provides valuable prognostic information for better management of breast carcinoma patient.

KEYWORDS

breast carcinoma, Robinson grading of cytology, Eleston & Ellis modified bloom-Richardson grading of histopathology.

Introduction:

Carcinoma of breast is a major continuing oncologic problem in females having incidence of 27.0% of total carcinoma among women and 21.5% mortality of total breast carcinoma in India (1). Since last decades, cytodagnosis has gained importance due to rapid results. Fine needle aspiration cytology is most commonly performed preoperative diagnostic modality for initial evaluation of breast carcinoma. Robinson grading of cytology can be used to provide important information on tumour biologic behaviour and prognostic information to oncologist and patients who undergo for preoperative neoadjuvant chemotherapy(2) . Eleston & Ellis modified bloom-richardson grading of histopathology is a widely accepted grading system and has been found to have good prognostic correlations(3). The present study is conducted with following aims.

Aims:

To grade cytological aspirates according to Robinsons grading system in breast carcinoma ,

To grade histological material according to elston and ellis modified bloom Richardson grading system in breast carcinoma

To correlate cytological and histopathological grades in breast carcinoma.

Method and Material: :

65 cases were studied. Clinically and radio graphically suspected patients of breast carcinoma who have done preoperative fine needle aspiration cytology as well as under gone for mastectomy surgery are included in present study. After taking fine needle aspiration, smears were stained with haematoxylin eosins stain and papanicolau stain. The cytological grading was done by using Robinson’s grading which include: cell uniformity, cell dissociation, nuclear size ,nucleoli ,nuclear margin and chromatin. score 1,2,and 3 is given to each criterion and explained in table 1.

**Table 1: Robinsons’ cytological grading system(4)
Table - 1**

Criterion	Score 1	Score 2	Score 3
Cell uniformity	monomorphic	Mildly pleomorphic	Pleomorphic
Cell dissociation	Mostly in cluster	Single +clusters	Mostly single
Nuclear size	2 times size of rbc	3-4 times size of rbc	>5 times size of rbc
Nucleoli	Indistinct	Noticeable	Abnormal
Nuclear margin	Smooth	Slightly irregular	Irregular
Chromatin pattern	Vesicular	Granular	Clumping

grade 1: score 6-11 grade 2:score 12-14 grade 3:score 15-18

In histopathology ,sections were stained with haematoxylin& eosins and grading was done by bloom-Richardson’s grade which includes tubule formation, nuclear pleomorphism mitosis. Score 1,2, and 3 is given to each criterion and explained in table 2.

**Table 2: Eleston & Ellis modified bloom-richardson grading of histopathology(5)
Table – 2**

Criterion	Score 1	Score 2	Score 3
Tubule formation	>75%	10-75%	<10%
Nuclear pleomorphism	Small, regular, uniform	Moderate variation in shape and size	Marked variation in size and shape
Mitotic counts per 10 high power field	0-9	10-19	>20

grade 1: score 3-5 grade 2:score 6-7 grade 3:score 8-9

Observation:

On cytological grading out of 65 cases ,13 cases(20%),33cases(50.77%),19 cases(29.23) are graded as grade I, II, and III respectively. On histopathology grade, 12 cases (18.46%), 33 cases (50.77), and 20 cases (20) graded as I, II and III re-

spectively. So overall 78.66% concordance is seen between cytological and histopathological grades. In context of grades 76.92%,84.85%, and 89.61% concordance is seen in grade I, II and III respectively. The highest concordances is observed in grade III is of 89.61%. Nuclear feature is most important parameter which is maximum correlated in either of grading system.

Table 3: Correlation between Robinson grading of cytology and Eleston & Ellis modified bloom-richardson grading of histopathology in cases of breast carcinoma .(5)
Table – 3

Robinson cytological grade	No of cases in cytology	Cases in histopathologic grade			Corcondance rate
		grade I	gradell	gradelll	
Grade I	13(20.00%)	10	03	-	76.92%
Grade II	33(50.77%)	02	28	03	84.85%
Grade III	19(29.23%)	-	02	17	89.47%
TOTAL	65	12(18.46%)	33(50.77%)	20(33.77%)	86.61%

Discussion:

Here, present study shows cytological grade is very well correlated with histoplathologic grade. Eleston & Ellis modified bloom-richardson grading of histopathology is a widely accepted grading system and has been found to have good prognostic correlations(3) fine needle aspiration cytology plays major role in diagnosis of breast carcinoma. Robinson grading of cytology can be used to provide important information on tumor biologic behaviour and prognostic information to oncologist and patients who undergo for preoperative neoadjuvant chemotherapy(2) .so cytological grading system helps in identifying

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high grade tumors which are more likely respond to neoadjuvant(6) .

The observations of present study is compared with other study. Concordance rate between Robinson grading of cytology and Eleston & Ellis modified bloom-richardson grading of histopathology in other studies like robinson et al(7)(1994) is 56.9%, sultana et al(8)(2006) is 86.3%, khan et al(9) (2009) is 89.1% , pandya et al(10) (2011) is 74.57% which is comparable with the present study which has 84.61% concordance rate.

Conclusion:

Robinson s grading system is reproducible and correlated well with Elston and Ellis modified bloom richardson grading system. pathologist should not restrict to provide only diagnosis but if accurate cytological grade will be included in reports ,it will be great help to oncologist for better management of breast carcinoma treatment. Therefore it should be part of routine cytology reporting of carcinoma breast cases .

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