Original Article

Diagnostic Utility Of Scrape Cytology In The Intraoperative Diagnosis Of Breast Lumps

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Abstract

INTRODUCTION: Scrape cytology is a modification of imprint cytology in the rapid intraoperative diagnosis of tumors. There are many controversies in rapid diagnosis of surgically removed specimens and single completely reliable method has not yet been developed. The study is undertaken to evaluate the role of scrape cytology which does not require special setup in the diagnosis of intraoperative lesions of breast.

OBJECTIVES : To perform scrape cytology of surgically operable breast masses and evaluate its accuracy in relation to histopathological diagnosis.

MATERIALS AND METHODS : A total of 82 surgically resected specimens from breast were examined by scrape cytology before formalin fixation and compared with histopathological sections which were considered as gold standard.

RESULTS : Total 82 cases were subjected to scrape cytology 78 cases was given cytological diagnosis . Among 78 cases 43 were benign 35 were malignant lesions in comparison with histopathology showing sensitivity,specificity and accuracy of 100%,82.86% and 92.31% respectively .

Conclusion : Intraoperative scrape cytology is a good complement to histopathology in the diagnosis of cancer where frozen section facilities are often not available, since a rapid preliminary diagnosis may help in surgical management planning .

KEY WORDS : Scrape, cytology, intraoperative, diagnosis

INTRODUCTION

Scrape cytology was first introduced in 1927 by Leonard S. Dudgeon and Vincent Patrick at the University of London.[1] They raised the horizons of the rapid cytological diagnosis of freshly cut specimens with reliable accuracy rates.[1,2] Following this, several studies done in the past have discussed the use of imprint and touch preparation, as a tool for intraoperative diagnosis.[1]

A palpable breast lump is a common health problem to both attending clinician and pathologist.[2] The diagnostic procedure should be simple,reliable,reproductive,less traumatic, cost effective, less time consuming and its diagnostic accuracy. [2]Mammography helps in detection of malignant neoplasms non invasively.The triple assessment consisting of clinical evaluation, mammography and fine needle aspiration cytology has been routinely practiced and it is an adjunctive to conventional open biopsy in the pre operative diagnosis of breast lumps.[3]

Breast carcinoma is the second most common malignant tumor and one of the leading cause of death in women. The incidence of breast cancer is increasing in the world especially in developing countries. It accounts more than 1,00,000 cases occurring worldwide annually.[3,1]

Scrape cytology is a modification of imprint cytology in the rapid intraoperative diagnosis of tumors.[4]There are many controversies in rapid diagnosis of surgically removed specimens and single completely reliable method has not yet been developed. [5]The study is undertaken to evaluate the role of scrape cytology which does not require special setup in the diagnosis of intraoperative lesions of breast.

AIMS AND OBJECTIVES

To evaluate the scrape cytology of surgically removed breast lumps and to evaluate its accuracy in relation to histopathological diagnosis after H&E staining .

MATERIALS AND METHODS

The study was done in the department of Pathology, in coordination with department of Surgery. Over a period of 1 year from March 2019 to May 2020 a total of 78 patients having a palpable breast lumps who underwent operative treatnment .

Clear glass slide was touched gently on the cut surface of the specimen and scrapings were taken at several places from each specimen before formalin fixation and compared with histopathological sections which were considered as gold standard. On an average, four slides per case were taken from different representative areas. The slides were labelled and immediately put into 95% ethyl alcohol and stained with a modified rapid Papanicolaou stain and rapid H&E stain was done. Rest of the tissue was fixed in10%formalin and processed in leica histokinete processed tissue was embedded in paraffin wax and blocks were made. Chi-square test was done statistical analysis

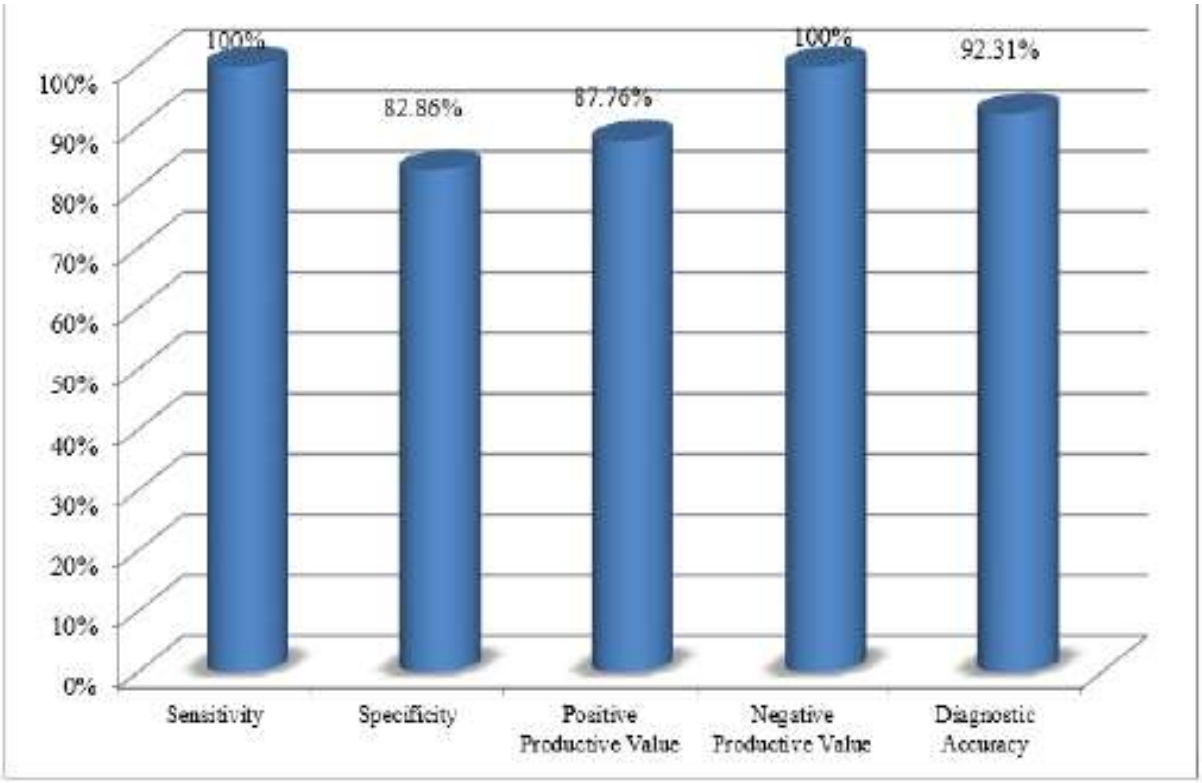
RESULTS

Total of 78 cases were examined comprising of 43 benign lesions and 35 malignant lesions on Histopathological examinations. Diagnostic ability of scrape cytology in breast lesions with respect to gold standard Histopathological examination showed 6 false negative results and there was no false positive results in our study which was statistically significant shown in Table1. Also diagnostic ability of intraoperative scrape cytology showing sensitivity, specificity, Positive predictive value(PPV),Negative predictive value(NPV) and accuracy were 100%, 82.86%, 87.76%, 100%, 92.31% respectively shown in Table2 bar diagram.

Table 1: Diagnostic ability of scrape cytology in breast lesion with respect to gold standard HPE

Intraoperative Scrape Cytology		Histopathological examination		Total	pvalue
		Benign	Malignant		
	Benign	43	06	49	56.715 0.0001**
	Malignant	00	29	29	
		43	35	78	

Table2: Bar diagram showing diagnostic ability of scrape cytology



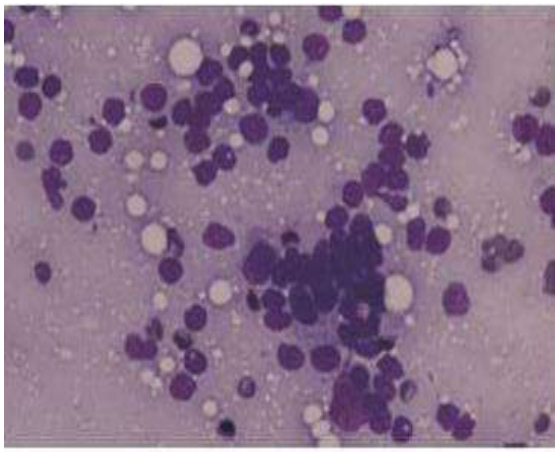


Figure 1:IOSC: (H&E) Ductal carcinoma

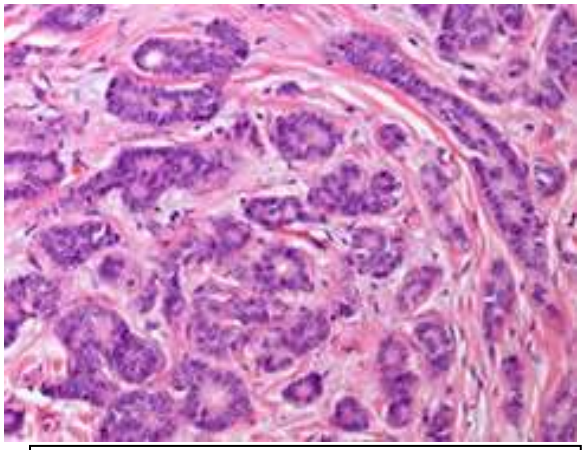


Figure 2: HPE: Infiltrating ductal carcinoma

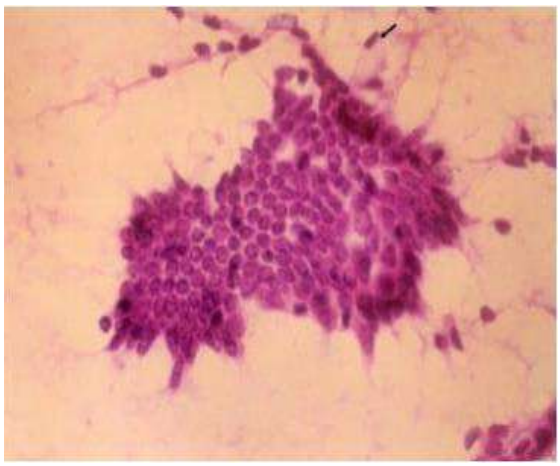


Figure 3:IOSC (H&E)Fibrocystic disease

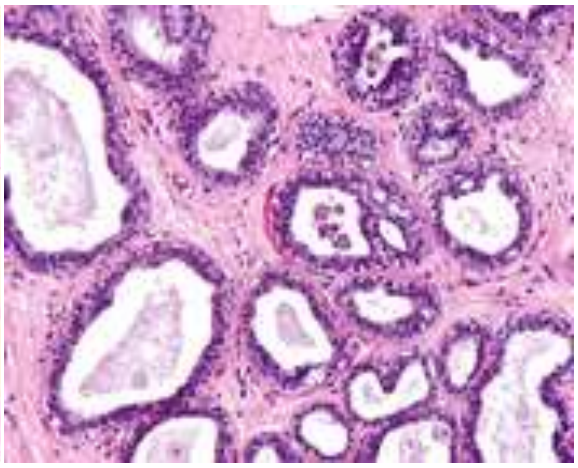


Figure4:HPE:Fibrocystic disease

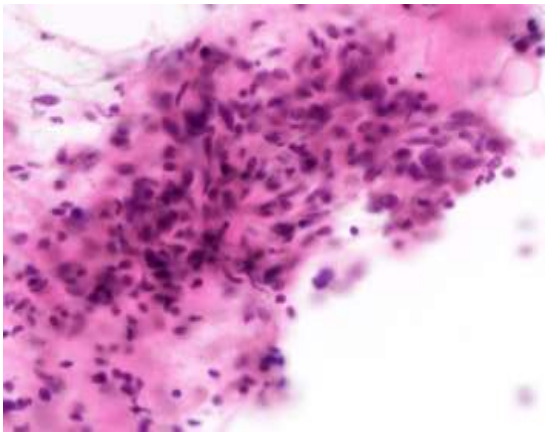


Figure 5:IOSC(H&E):Benign phyllodes

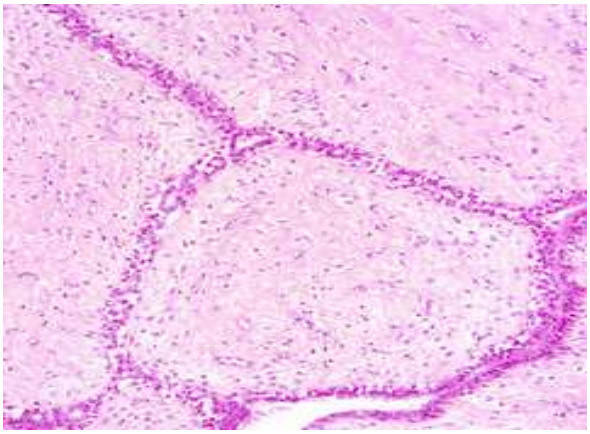


Figure 6:HPE: Benign phyllodes

DISCUSSION

Breast is one of the important organ in female representing motherhood . breast lesions commonly affect female and form a spectrum of lesions comprising of both benign and malignant tumors.[2,3] Intraoperative procedure like imprint cytology or scrape cytology have an important role despite the widespread popularity fine needle aspiration.[4]

In our study total of 78 cases were examined comprising of 43 benign lesions and 35 malignant lesions on HPE which was inconcordance with study done by khudier et al[5] showed total 110 cases consisting of 81 benign lesions compared and 29 malignant cases were studied.

In the present study out of 35 malignant lesions 29 were correctly diagnosed and 6 cases showed false negative . Paraffin sections of these 6 cases showed infiltrating ductal carcinoma, medullary carcinoma with DCIS, phyllodes, DCIS, microinvasive carcinoma and Infiltrating lobular carcinoma. These tumors were characterized by low cellularity.Similarly our study was in concordance with the study done by Ramraje et al[6] showed 7 cases of false

negative out of 45 malignant lesions .Also explains that carcinoma with more fibrous stroma may yield less cells which can be mistaken for benign lesions in scrape cytology.

In the present study scrape cytology showed sensitivity, specificity, Positive predictive value(PPV),Negative predictive value(NPV) and accuracy were 100%, 82.86%, 87.76%, 100%, 92.31% respectively which was similar to other studies

Table 2: Shows sensitivity,specificity and accuracy of other studies.

Study	No.of cases	Sensitivity	Specificity	Accuracy
Mosarrat et al[8]	123	98.11%	100%	99.19%
Issam et al[9]	91	95.8%	100%	96.8%
Bukhari et al[10]	105	91.3%	100%	95%
Hiregouder et al[11]	40	95.2%	100%	97.5%

Intraoperative scrape cytology helps in the diagnosis with regard to the nature of tumors. [7,8]This is very important where in FNAC is inconclusive or suspicious. Intraoperative scrape smears are simple, accurate, rapid, cost effective, diagnostic tool for intraoperative evaluation of breast tumors. In the categorization of benign and malignant lesions of the breast highest rate of diagnostic accuracy will be achieved when FNAC is combined with intraoperative cytology.[8]

CONCLUSION

Intraoperative scrape cytology is a good complement to histopathology in the diagnosis of cancer where frozen section facilities are often not available, since a rapid preliminary diagnosis may help in surgical management planning .

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