RESEARCH COMMUNICATION

Histopathology of Breast Carcinoma - an Audit of 50 Reports in Rawalpindi, Pakistan

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Abstract

Objective: The study was undertaken to document and highlight the shortcomings of histopathology reporting of breast carcinoma in Pakistan so that improvements can be recommended and a standardized protocol devised. Methods: This was a descriptive cross sectional study and was conducted at Histopathology Department, Armed Forces Institute of Pathology, Rawalpindi from 1st January 2008 to 31st October 2008. Fifty consecutive breast carcinoma reports received for review from different laboratories were analyzed for documentation of patients age, sex, type of procedure / specimen, specimen size, tumour size, invasive tumour type, invasive tumour grade, comment on excision margins, extent of lymph node involvement, insitu component, lymphovascular invasion, necrosis, skin involvement and tabular format. Frequencies and percentages were calculated for presence of these above mentioned variables in different reports, keeping in mind the possible information that could be obtained from a particular sample. Results: It was found that the variable least mentioned in the reports was in situ component commented upon in only 23.2% of reports. Necrosis was mentioned in 35% of reports. Tabular format was found in 36% of reports only. Conclusion: Marked deficiencies are seen in histopathology reports for breast carcinoma due to the lack of any standardized reporting system. Separate checklist formats for trucut biopsies, lumpectomies and mastectomies should be introduced to ensure uniform reporting.

Key Words: Breast carcinomas - histopathology reports - Pakistan

Introduction

Breast cancer ranks as one of the leading cancer types all over the world and is second only to lung cancer as the most prevalent cause of cancer death in women. In 2007 approximately 178,480 new cases of invasive breast carcinomas were diagnosed in women and 40,460 died due to breast cancer in the United States (Jemal et al., 2007). A tumor registry data analysis done at Armed Forces Institute of Pathology, Rawalpindi from 1992-2001 shows that breast carcinoma constitutes the most common malignancy in females constituting 26.0% of all cancers (Jamal et al., 2006). In two other studies from Karachi also 22.95% and 20.8% of malignancies were constituted by breast cancer (Bhurgri et al., 2000; Naila et al., 2000).

An efficient surgical, radiological and histopathological correlation is required to diagnose breast carcinoma at an early stage. This correlation also has a strong impact on the treatment outcome and long term follow up of the patient. The ultimate diagnostic tool after surgical and radiological assessment is histopathological evaluation. It is the responsibility of the surgeon to provide every possible detail regarding the breast biopsy specimen to the histopathologist. Only then will the histopathologist be able to give a complete and comprehensive report which is of the utmost importance from treatment and prognostic point of view. Different reporting formats are used for breast biopsies all over the world. In an attempt to standardize the surgical pathology reports for breast carcinomas, a format was prepared by members of department of pathology in Memorial Sloan-Kettering Cancer Centre, New York in 1993 (Rosai et al., 1993). Other recommendations for reporting of breast carcinomas include that by Association of Directors of Anatomic and Surgical Pathology (ADASP) in 2004 (ADASP., 2004) and National Health Service Breast Screening Programme in 2005. These formats include all the important points like demographic details, procedure, specimen size and weight, tumour location, multicentricity, tumour size, tumour type, tumour grade, presence or absence of insitu component, tumour necrosis, lymphovascular invasion, nipple and skin involvement and status of excision margins and lymph nodes which are necessary for further management of the patient.

In our country there are many histopathology laboratories varying from small private labs to large institutions which report breast cancers. Unfortunately there is no standardized reporting protocol being followed. Some prefer to give report in tabular form and some in descriptive form. Due to lack of standardization and inefficient communication between surgeons, histopathologists and oncologists many important details

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which should be a part of the report are missed.

The present study was undertaken to document and highlight the shortcomings of histopathology reporting of breast carcinoma so that improvements can be recommended and a standardized protocol devised.

Materials and Methods

Fifty consecutive breast carcinoma reports received at Armed Forces Institute of Pathology, Rawalpindi for review from different laboratories were retrieved. This was a descriptive cross sectional study. The study sample comprised a mixture of trucut biopsy, lumpectomy and mastectomy reports. They were analyzed for documentation of patients age, sex, type of procedure / specimen, specimen size, tumour size , invasive tumour type, invasive tumour grade, comment on excision margins, extent of lymph node involvement, insitu component, lymphovascular invasion, necrosis, skin involvement and tabular format. Frequencies and percentages were calculated for presence of these above mentioned variables in different reports, keeping in mind the possible information that could be obtained from a sample.

Results

The study included thirty-two mastectomies, two lumpectomies and seven trucut biopsies. Nine reports did not mention the type of specimen/procedure.The summarized results of analysis of reports are shown in Table 1.

Evaluation of documentation of age, gender, type of procedure, specimen size, histologic tumour type and reporting format (tabular or descriptive) could be done in all the fifty cases. Age, gender and specimen size were mentioned in all 50(100%) cases. Type of procedure was mentioned in 41(82%) cases. Thirty two specimens were mastectomy specimens, out of which twenty two were modified radical mastectomies and ten were simple mastectomies. Specimen type was not mentioned in nine cases. Seven cases were trucut biopsies. Two cases were lumpectomies.

Tumour type was mentioned in all 50(100%) cases. Forty-two (84%) were reported as invasive ductal carcinomas, 6(12%) as invasive lobular carcinomas, 1(2%) as colloid carcinoma and 1(2%) as medullary carcinoma. Evaluation of documentation of tumour size could be done in thirty-four cases (32 mastectomies and two lumpectomies) as seven cases were trucut biopsies and nine reports did not mention type of procedure and specimens were in multiple fragments. Out of 34 cases, macroscopic tumour size was mentioned in centimeters or millimeters in 26(76%) cases. In 5(15%) cases tumour size was not mentioned as such but lesion size was recorded as gray white area, large mass, small mass etc. Only 3 (9%) cases did not mention tumour size at all. Tumour size measured macroscopically was confirmed by microscopic examination in only 4(11%) out of 34 cases.

Evaluation of documentation of excision margins in

Table 1. Documentation of Essential Variables

S.No	Feature	Documented	Total	%
1	Age	50	50	100
2	Gender	50	50	100
3	Procedure	41	50	82
4	Specimen size	50	50	100
5	Macroscopic tumour size	26	34	76
6	Tumour type	50	50	100
7	Tumour grade	26	47	55
8	Exc. Margins	24	34	71
9	L. Nodes	21	22	95
10	Insitu component	10	43	23
11	Lymphovascular Invasion	17	43	40
12	Necrosis	15	43	35
13	Skin Involvement	21	32	66
14	Tabular form	18	50	36

reports could be done in 34 cases (32 mastectomies and two lumpectomies). Out of these, status of excision margins was mentioned in 24(71%) cases. Assessment of documentation of tumour grade could be done in 47 cases as 3 biopsies had very scanty material inadequate for grading. Out of these 47 cases, 16(34%) cases were reported as grade 2, 10(21%) cases as grade 3 while 21(45%) cases were not graded at all. Regarding the 32 mastectomy specimens, documentation of lymph node status could only be assessed in 22 cases because 10 specimens were simple mastectomies however reporting of skin involvement could be evaluated in all cases. Out of 22 cases only 1 report did not mention the lymph node status while documentation of skin involvement was present in 21(66%) out of 32 cases. Forty-three reports could be evaluated for mention of insitu component, necrosis and lymphovascular invasion because seven cases were trucut biopsies and the material was not enough for evaluation of these features. Out of these 43 reports, in situ component was mentioned in 10 (23.2%), necrosis in 15 (35%) and lymphovascular invasion in 17(39.5%) reports. Only 18 (36%) reports were in tabular format.

Discussion

A positive histopathology report is the starting point for the treatment of breast carcinoma in most oncological cases. In this study it was found that significant proportion (18 %) of reports did not mention the type of surgical procedure. This may be due to incomplete clinical information provided by the surgeon to the pathologist. In this situation it is difficult to ascertain whether the specimen is a lumpectomy, quadrantectomy, excision biopsy or incisional biopsy, more so if it is received in multiple pieces. In such circumstances it is also difficult to comment on excision margins and exact tumour size.

Specimen size was mentioned in all the fifty cases. This is important to assess whether representative sections are adequately taken, because in a larger specimen a large number of areas should be sampled in order to exclude the chance of missing important findings (Ellis et al., 2005).

Tumour size is the most important variable regarding staging of breast carcinoma. It was found that macroscopic tumour size was mentioned in centimeters or millimeters

in 76% cases. In 15% cases size was not mentioned but tumour was mentioned as gray white area, large mass, small mass etc. This does not clarify the exact tumour size which should be documented as such. Moreover 9% cases did not mention tumour size at all. Tumour size measured macroscopically was confirmed by microscopic examination in only 11% cases. This has been greatly emphasized in literature, in that the microscopic size may be different from that measured on gross examination and is more accurate especially in poorly delineated tumours. This is important in defining T1 and T2 lesions and planning postoperative adjuvant treatment (James et al., 2003; Verschraegen et al., 2005).

In this current study it was found that 45% cases were not graded at all. It was also noted that types other than invasive ductal NOS such as invasive lobular, mucinous, medullary and cribriform etc. were not graded. It is recommended that grading be done in all breast carcinomas, whether invasive ductal NOS, or any other special type. The recommended method of grading is Scarff-Bloom-Richardson method of grading (Amat et al., 2002). DCIS should also be graded into low and high grades whenever found either with or without invasive tumour. Tumour grading has a great impact on prognosis (Blamet et al., 2007).

The status of excision margins is very important and was mentioned in almost two third of the cases. This finding is extremely important for the surgeon and oncologist to estimate any chance of local recurrence of tumour and decide mode of adjuvant therapy (Douglas-Jones et al., 2002). It is recommended that total number of lymph nodes examined and number of positive nodes should be mentioned. In this study it was found that out of twenty-two reports only one report did not mention the lymph node status. The size of the largest metastatic deposit and the presence or absence of extracapsular tumour spread should also be mentioned which help the oncologist to visualize the extent of metastatic disease which may influence therapeutic decisions (James et al., 2003; Blancas et al., 2006). The status of axillary lymph nodes is one of the most important prognostic factors. Disease free survival rates decrease as the number of positive nodes increase (ADASP., 2004) 6. The clinical significance of micrometastases (tumour deposit more than 0.2mm but not more than 2mm in size) and isolated tumour cells in the nodes particularly those detected by immunohistochemistry remains a matter of debate although most studies with significant number of patients have shown that micrometastases are associated with small but significant decrease in overall survival time (ADASP., 2004) .

Reports varied from a tabular to a descriptive format, some having a combination of both. It was found much easier to glean the relevant information from a tabular format and these 18 reports were also found to be more comprehensive. This format of reporting in tabular / checklist style should be encouraged.

Only 23.2% of the reports mentioned insitu component. This is also an essential feature which should be documented along with its extent and relation to excision margins. For in situ tumours it is also important

to differentiate between ductal (DCIS) and lobular (LCIS) lesions and to subtype and grade DCIS because all these parameters have prognostic significance (Burstein et al., 2004).

Lymphovascular invasion has been shown to be an important and independent prognostic factor, particularly in patients with T1, node negative breast cancers (Hoda et al., 2006). It has an adverse effect on clinical outcome. The presence of necrosis has also been associated with an adverse effect on clinical outcome (Ladislav et al., 2003). Lymphovascular invasion and necrosis were reported in 39.5 % and 35% of the reports respectively. Skin involvement which is also a prognostic factor was not mentioned in 34% of the cases (Uwe et al., 2006).

In our setup many times there is no residual tumour in a mastectomy specimen and on probing the patient one discovers that neoadjuvant chemotherapy has been administered or lumpectomy has been done previously. In this case the tumour details will only be available from the clinical notes or previous biopsy report if any. Extensive sampling with thorough examination of the mastectomy specimen is required in such cases to find microscopic foci of residual tumour which may not be visible grossly.

It is advisable that separate checklists for needle biopsy, incisional biopsy, lumpectomy /wide excision / quadrantectomy, mastectomy and axillary clearance are devised. Unless the histopathologist has complete clinical information available it will be impossible to use the checklist properly, e.g. if the patient has had a lumpectomy; followed by mastectomy with axillary clearance, the tumour details such as site, size, grade will only be available in the lumpectomy specimen, and the mastectomy specimen will only yield information about any associated DCIS or other pathology in the rest of the breast, any residual tumour and axillary lymph node status. Unless the same pathologist receives both the samples with complete information the checklist cannot be filled out accurately.

A minimum data set form should also be devised which may be filled in by the oncologist or the pathologist gathering information from all the above reports in order to have one comprehensive document containing all the information pertinent to the management of the patient . This would give the final TN staging for the patient. Apart from this a good communication between surgeon, histopathologist and oncologist is mandatory.

In conclusion, marked deficiencies are seen in histopathology reports for breast carcinoma due to lack of standardized reporting system. Separate checklist formats for trucut biopsies, lumpectomies and mastectomies should be introduced to ensure uniform reporting.

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