

Changing Trends in Breast Fine-Needle Aspiration: Results of the Papanicolaou Society of Cytopathology Survey

Sana O. Tabbara, M.D.,^{1*} Andra R. Frost, M.D.,² Mark H. Stoler, M.D.,³ Nour Sneige, M.D.,⁴ and Mary K. Sidawy, M.D.¹

Following the NCI-sponsored consensus conference on fine-needle aspiration of the breast, the Criteria and Nomenclature Task Force of the Papanicolaou Society of Cytopathology undertook a survey to assess the status of these issues and recommendations among practicing cytopathologists. The survey was designed to assess the impact of the changing trends in the diagnosis of breast lesions on cytopathology laboratories. It also intended to assess the impact of the recommendations of the consensus conference concerning the inclusion of a statement in breast FNA reports recommending the use of the triple test, the use of the proposed diagnostic terminology, and to evaluate criteria for specimen adequacy in breast FNAs used in different institutions. The results of this survey indicate the impact of an increasing use of core biopsies on the number of breast FNAs performed over the last several years. The recently recommended diagnostic terminology for breast FNA has quickly gained wide acceptance, as has the fundamental concept of the triple test. The issue of specimen adequacy, however, remains controversial, with some laboratories utilizing quantitative criteria, while the majority do not. Diagn. Cytopathol. 2000;22:126–130.

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Fine-needle aspiration (FNA) of the breast is an established diagnostic method in the evaluation of palpable breast masses.^{1,2} Its reliability has also been demonstrated in the diagnosis of radiologically imaged, nonpalpable lesions.^{3,4}

However, FNA has some limitations. One is the inability to reliably distinguish invasive from in situ carcinoma. The other is the difficulty in precisely equating cytomorphologic features in breast aspirates with the histologic classification system used as the gold standard, particularly in benign lesions.⁵ Because of these limitations, core biopsy of palpable and nonpalpable breast lesions has gained in popularity over the last several years, displacing FNA as the preferred diagnostic modality prior to excision.⁶ However, the superiority of one diagnostic method over the other has not yet been established and may be dependant on the nature of the breast lesion, the skill of the individual obtaining the sample, and the skill of the pathologist interpreting the specimens.

In September, 1996, the National Cancer Institute (NCI) sponsored a conference for the purpose of defining a uniform approach to breast FNA biopsy, and to address some of the controversies related to breast FNA, including the use of core biopsies.⁵ Although it was recognized that “FNA of both palpable and nonpalpable breast lesions may be an appropriate first diagnostic step,” the recommendations left the decision to use aspiration or core biopsy to the clinician caring for the patient. The conference recommendations also acknowledged the value of the “triple test,” i.e., the combination of physical examination, imaging findings, and cytologic examination in the reliable diagnosis of breast cancer. Consequently, it was suggested that a recommendation be included in the cytopathology reports of breast FNAs to support the clinical application of the “triple test.”

The controversial topic of defining specimen adequacy in breast FNA was also addressed. The recommendation of the NCI-sponsored conference included no specific requirement for a minimum number of ductal cells for specimen adequacy. Rather, adequacy should be determined by 1) “the opinion of the aspirator that the cytologic findings are consistent with the clinical findings and that the lesion was

¹Department of Pathology, The George Washington University Medical Center, Washington, DC

²Department of Pathology, University of Alabama at Birmingham, Birmingham, Alabama

³Department of Pathology, University of Virginia Health Sciences Center, Charlottesville, Virginia

⁴Department of Pathology, University of Texas MD Anderson Cancer Center, Houston, Texas

*Correspondence to: Sana O. Tabbara, M.D., The George Washington University Medical Center, Department of Pathology, 901 Twenty Third Street, NW, Room 2221 South, Washington, DC 20037. E-mail: patsot@gwumc.edu

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sampled adequately," and 2) the opinion of the pathologist that the smears do not have significant artifacts or distortion and can be interpreted.⁵ It was further recommended that the microscopic description of the sample addresses the presence and amount of epithelial cells in addition to the nonepithelial components.

A third recommendation from the NCI conference was the use of a standardized approach for the reporting of breast FNAs.⁵ The classification system proposed at the conference places breast FNAs into one of five categories: 1) benign, 2) atypical/indeterminate, 3) suspicious/probably malignant, 4) malignant, 5) unsatisfactory.

Following this conference, the Criteria and Nomenclature Task Force of the Papanicolaou Society of Cytopathology undertook a survey to assess the status of these issues and recommendations among practicing cytopathologists. Specifically, this survey was designed 1) to assess the impact of the changing trends in the diagnosis of breast lesions on cytopathology laboratories, 2) to assess the impact of the recommendations of the recent consensus conference concerning the inclusion of a statement in breast FNA reports recommending the use of the triple test, and the use of the proposed diagnostic terminology, and 3) to evaluate criteria for specimen adequacy in breast FNAs used in different institutions.

Materials and Methods

The survey (Fig. 1) was sent to all members of the Papanicolaou Society (approximately 382) and was published in the November, 1998, issue of *Focus*, the newsletter of the Papanicolaou Society of Cytopathology, with instructions to complete only one survey per laboratory.

Results

A total of 83 laboratories responded. Of these, 46 (55%) were designated as practices in academic institutions, 36 (43%) as practices in community hospitals (private practices and other types of affiliations other than academic), and one respondent did not specify the laboratory type.

Changing Trends

Figure 2 summarizes and compares the number of FNAs and core biopsies of breast lesions performed in 1993 and 1997. When comparing laboratories in academic institutions and those in other than academic institutions, the overall trend was similar.

The majority of responding laboratories reported an increase in FNAs of palpable and nonpalpable lesions, although the number of laboratories reporting a decrease was substantial. The greatest increase was reported in the number of core biopsies. Table I illustrates the trends in the changes in the numbers of FNAs of palpable and nonpalpable lesions and core biopsies interpreted in 52 laboratories. The most common trend was an increase in all three

types of specimens, followed by laboratories who reported a decrease in FNAs (palpable and nonpalpable) with an increase in core biopsies, and laboratories with an increase in FNAs of palpable lesions, a decrease in FNAs of nonpalpable lesions, and an increase in core biopsies.

Diagnostic Terminology

The total number of institutions using the diagnostic terminology proposed at the NCI-sponsored conference on breast FNA was 40 (50%), with 80 laboratories responding to this query (Fig. 3). More laboratories in academic institutions, 28 (62%), than other types of laboratories, 12 (34%), had adopted this terminology.

Specimen Adequacy

With regard to specimen adequacy, 36 (45%) of laboratories required a minimum number of cells as a criterion for specimen adequacy, whereas 44 (55%) did not. Laboratories in academic institutions were slightly more likely than other types of laboratories to require a minimum number of cells for specimen adequacy (49% vs. 40%, respectively). The most commonly reported minimum number of epithelial cell clusters required was six (18 laboratories), and the most commonly reported minimum number of epithelial cells per cluster required was 10 (eight laboratories). In addition, of 70 total respondents, the majority (70%) did not believe that criteria for specimen adequacy should differ in FNAs of palpable and nonpalpable breast lesions. Of those laboratories that did believe the criteria should differ in the two types of lesion, 10 provided an explanation. Five respondents believed that more cells should be required from nonpalpable lesions because these are usually not aspirated by the pathologist and, therefore, useful clinical information is often missing, whereas the other five thought fewer cells should be required from nonpalpable lesions because they are often of smaller size.

Of 81 responding laboratories, 78% recommended adding a footnote to benign or scant samples which advocated use of the "triple test" to determine the necessity of obtaining additional diagnostic material. This recommendation is used with slightly higher frequency in laboratories outside academic institutions

Discussion

The reliability of FNA in separating benign from malignant breast lesions has been established. However, the ability to distinguish proliferative lesions with and without atypia and DCIS by FNA is more limited.⁶⁻¹⁰ Masood et al.^{7,8} devised a cytological scoring system and showed a high concordance between cytologic and histologic interpretations. Sneige and Staerke⁹ advocated the use of architectural criteria in addition to cytologic features for a more reliable identification and classification of proliferative breast lesions. However, a study evaluating the applicability of the above-

Papanicolaou Society of Cytopathology Survey Changing Trends in Breast FNA

Name: _____
Institution (to avoid duplication of data we ask for *one* survey per institution) _____

Academic Community Private Other (specify) _____

Purpose of the survey:

- Evaluate the changing trend of breast FNA in recent years
- Evaluate the impact of the recommendations developed and approved at the NCI sponsored conference in 1996
- Evaluate criteria of adequacy of breast FNA used in different institutions

I. Compare your data from 1993 with 1997

- 1) Total number of breast FNA cases
 1993 _____ 1997 _____
- 2) Number of palpable breast FNAs performed by pathologists or clinicians
 Increased Decreased
 # in 1993 _____ (if available) # in 1997 _____ (if available)
- c) Number of nonpalpable breast FNA performed under radiologic guidance
 Increased Decreased
 # in 1993 _____ (if available) # in 1997 _____ (if available)
- d) Number of core breast biopsies
 Increased Decreased
 # in 1993 _____ (if available) # in 1997 _____ (if available)

Comment: _____

II. Are you using the diagnostic terminology proposed at the NCI sponsored conference?

Yes No Intend to use

III. Do you require a minimum number of cells (epithelial and/or stromal) as a criterion for specimen adequacy? (for nonspecific benign findings of solid lesions ONLY)*

No
 Yes

If yes please specify number of cells, clusters required _____

*Refer to the next page for summary of the controversy in recent literature

IV. Should criteria for adequacy be different for palpable vs. nonpalpable breast lesions?

Yes No

Comment: _____

V. Do you recommend adding a footnote to scant and/or benign FNA samples such as “The diagnosis of breast FNA should be interpreted in the context of physical examination and imaging. If the findings of the “triple test” are discordant, additional material should be obtained”?

Yes No

Fig. 1. Papanicolaou Society of Cytopathology survey; changing trends in breast FNA.

referenced criteria concluded that these criteria require further assessment and refinement.⁶ These limitations, coupled with the lack of uniformity and number of diagnostic categories used in the reporting of FNAs, have contributed to the emergence of core biopsy of palpable and nonpalpable lesions as the preferred diagnostic modality. The results of this survey indicate the impact of an increase in core biopsies on the number of breast FNAs performed over the last several years, with a significant number of

respondents reporting a decrease in FNAs interpreted. This survey also shows that the conclusions of the NCI-sponsored conference on breast FNA do appear to have had an effect on the reporting of breast FNAs. The majority of respondents reported either using the terminology recommended or intending to use it (68%).

The controversy in the definition of specimen adequacy in breast FNAs has been addressed by several authors.¹¹⁻¹⁷ Several studies have shown that most false-negative breast

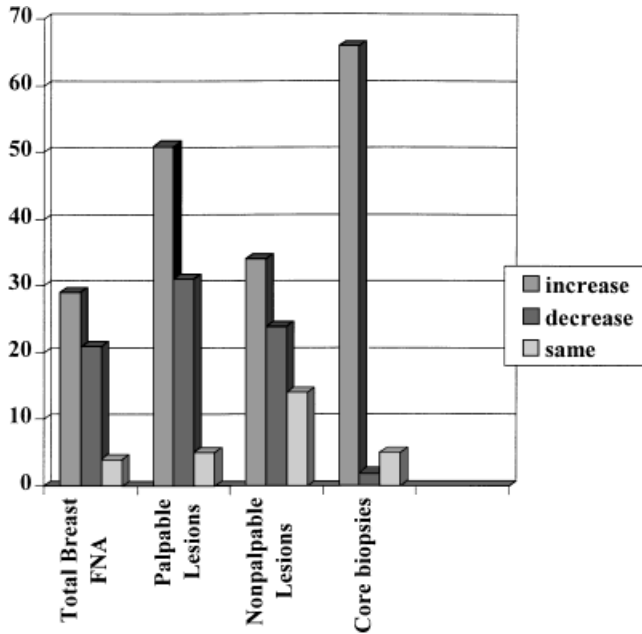


Fig. 2. Comparison of numbers of FNAs and core biopsies performed in 1993 and 1997.

Table I. Frequency of Combinations of Changes in the Number of FNAs and Core Biopsies

FNA, palpable	FNA, nonpalpable	Core Bx	Total (n = 52)	%
Increased	Increased	Increased	13	25
Decreased	Decreased	Increased	9	17
Increased	Decreased	Increased	9	17
Decreased	Increased	Increased	5	10
Increased	Same	Increased	5	10
Decreased	Same	Increased	3	6
Decreased	Same	Same	2	4
Same	Increased	Increased	2	4
Decreased	Decreased	Decreased	1	2
Decreased	Increased	Same	1	2
Same	Decreased	Increased	1	2
Same	Same	Same	1	2

FNAs have low cellularity.^{11,12,15} Therefore, some authors advocate that a minimum number of epithelial cells be required for diagnosis, and samples containing fewer than the specified minimum be reported as nondiagnostic.^{13,14} Others believe that requiring a specific cell count does not allow for the histologic variability of breast lesions and that adequacy should be based on the clinical judgment of the aspirator.¹⁵⁻¹⁷ The cytopathology community remains divided on the issue of specimen adequacy, as demonstrated by this survey. Most laboratories (55%) are not requiring a minimum number of cells as a criterion of specimen adequacy, with several laboratories commenting that adequacy should be determined by the aspirator, as suggested in the conclusion from the NCI-sponsored conference.⁵ Of those laboratories requiring a minimum number of cells, the

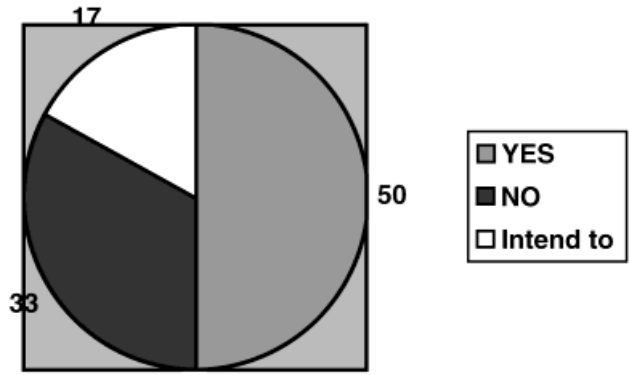


Fig. 3. Number of institutions using the proposed diagnostic terminology for reporting breast FNAs.

quantitative requirements closely followed the published recommendation of at least six clusters of cells with a minimum of 5-10 cells/group.^{12,14} Furthermore, the concept of the "triple test" appeared to be widely recognized and utilized. The most common rationale given for not using such a footnote was that the clinicians utilizing the laboratory services were already aware of the importance of the "triple test."

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