

Significance of Needle Aspiration Biopsy for Breast Cancer

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The results of aspiration biopsy cytology were clinically evaluated on the basis of clinical experience with 608 patients with breast cancer at the First Department of Surgery, Nagasaki University School of Medicine.

Aspiration biopsy is of clinical value in making a diagnosis of small-sized tumors. There was no detrimental outcome to promote tumor-cell spread locally as well as to give rise to distant metastasis into the other organ. One should be aware of a no cell finding in relation to scirrhous carcinoma and intraductal papillomatosis. Emphasis is placed on recommendation of open biopsy without repeated aspiration maneuver.

It is assumed that the procedure of excisional biopsy exerts an ill effect on their prognoses in addition to the main drawback of cosmetic view¹⁾²⁾ so that there is a growing tendency to avoid excisional or incisional biopsy as far as possible.

Aspiration biopsy cytology has been developed by Martin and Ellis³⁾ in 1930. The fact is clarified by recent study that aspiration is simple in technique without complication and also its accuracy is approximately 70 to 90 % irrespective of the prognosis.

This study aimed in elucidation of significance of aspiration biopsy cytology for breast cancer.

Introduction

Breast cancer has been increasing in occurrence among women in accordance with improvement of dietary habitus of life. The diagnosis used to be made by palpation and mammography including xenomanmography. According to advances in image diagnosis, the application of CT and thermography in addition to CR and DSA was introduced as an adjuvant diagnostic procedures. However, it has a limitation of detection of small-sized tumor. It has been recognized that histological examination of biopsied specimens is beneficial and essential in determining precise diagnosis even though breast mass existing on the superficial body surface, could easily be detected on palpation.

Material and methods

During a five year period from January 1989 to December 1993, aspiration needle biopsies were performed in 608 patients with palpable breast masses. The needles used in this study adopted 22 G in size. As a rule, needle puncture was made once for the sake of prevention from tumor cell spreading by repeated punctures. Aspirated samples were sprayed on the slide glass to smear quickly. In the case of cystic fluid, sediment was smeared in the same manner and fixed with 95 % ethanol and stained by Papanicolaou's method.

Table 1 Results of aspiration biopsy cytology

| Finding | |
|---------|-----|
| No cell | 71 |
| class I | 440 |
| II | 10 |
| III | 7 |
| IV | 29 |
| V | 58 |

Results

Table 1 showed the results of cytological examination. No cell finding was seen in 71 (11.6 %) out of 608. As far as adequate puncture is carried out, no cell finding is a valuable finding disclosing a fibrous-poor cell containing focus. Defined diagnosis was established in 19 of class IV and 41 of class V. Meanwhile, the accuracy was 86.2 % in class IV and 95.8 % in class V, respectively, indicating 92.2 % in class IV and V as shown in Table 2. On the other hand, a false positive was seen in 2 of dysplasia, 3 of fibroadenoma and one of lactating adenoma, respectively. The results showed that cytological examination had a limitation of making precise diagnosis for borderline

Table 2 cytology according to histology

| | Papillo- tumor | Medullry tubular | Scirrhou | Paget | Mucious | total |
|---------|-------------------|---------------------|----------|-------|---------|-------|
| No cell | | | 2 | 1 | | 3 |
| class I | 4 (40%) | 4 (40%) | 1 | | | 10 |
| II | 2 (23%) | 1 (10%) | 3 | | 1 | 6 |
| III | | 2 (66%) | 1 | | | 3 |
| IV | 12 (48%) | 8 (32%) | 5 | | | 25 |
| V | 13 (28%) | 32 (69%) | 1 | | | 46 |

Table 3 Cytology d tumor size

| | n0 | n1 α | n1 β | n2 | positive rate |
|----|------------|-------------|------------|----|---------------|
| T1 | 17 (65.4%) | 6 | 2 | 1 | 26/29 (89.7%) |
| T2 | 21 (71.9%) | 12 | 10 | 4 | 57/58 (98.2%) |
| T3 | 1 | | 5 | 1 | 7/7 (100%) |

Table 4 Relationship between T and n factors

| | tumor size | cytology | |
|----|------------|------------|-----------|
| | | positive | negative |
| T1 | 26 | 29 (73.1%) | 7 (26.9%) |
| T2 | 57 | 51 (87.7%) | 7 (10.5%) |
| T3 | 7 | 4 (100%) | |

lesions such as intraductal papillomatosis and lactating adenoma with which inflammatory and activated epithelial cells tended to mingle.

On the other hand, the accuracy according to histological types was revealed in Table 3. The cytological examination was recommended for papillotubular and medullary tubular carcinomas. In contrast, cytology was of no value in scirrhou carcinoma. In case of scirrhou carcinoma, examiner should be aware of prudent puncture procedure so as to collect more cell element. In such cases, one should not hesitate to perform open biopsy.

Table 4 demonstrated the results of cytological examinations in relation to t-factor and n-factor. There was no close correlation with n-factor and also satisfactory positive rates were revealed even in the tumor of less than 2 cm in size although false negative rates remained still not allowable in T1.

Discussion

Aspiration biopsy cytology is of great value as an adjuvant diagnostic approach to determine as to whether the tumor mass in the breast is malignant or not. In this study, 71 out of 608 (11.6%) showed no cell finding. From the result, emphasis is placed on the authenticity of more precarious tumor-puncture to enhance the accuracy rates.

Physicians were aware of aspiration biopsy cytology for small-sized tumors and hard masses with abundant fibrous tissues. A no cell finding is a valuable information on the tumor as far as the puncture is properly performed. The

cytologic finding of no cell finding implies the presence of scirrhou carcinoma and/or recommendation of urgent open biopsy. In scirrhou carcinomas, it is characteristic of poor cell element and small cell group with poor atypism so that cytological finding is apt to draw underestimation of no cell or no malignancy of class I or II. It is warned against repeated aspiration biopsies in vain. Open biopsy is of great help to solve the result of the finding of a false negative.

On the other hand, attention should be paid that cytological examinations are prone to implicate intraductal papillomatosis as the finding of false positive. In non-infiltrating carcinomas, moderately high positive rate was obtained in reflection of the authenticity of needle puncture.

In a small-sized tumors of less than 2.0 cm, the accuracy rates of cytological examination are limited to a range of 73 to 75%. It is assumed that cytological results for small-sized tumors are permissible under present circumstance so that we have no recommendable approaches including image diagnosis.

In contrast, aspiration biopsy cytology is of no use for the tumors of more than 3cm because no invasive imaging is helpful in making a diagnosis in addition to a risk of tumor cell dissemination by aspiration procedure. At present, evidence is accumulating that aspiration fails to be referable to make the tumor cells disseminated^(4,5).

This study seems to indicate that aspiration biopsy cytology is of great significance for small-sized tumors. As a rule, it is recognized that histological patterns of breast cancers are variegated as compared with those of

other organ carcinomas⁶⁾. Therefore, it is inevitable that judgement of cytology should be made in considering and recognizing histology of breast cancers. Needless to say, we must avoid degenerating changes of aspirated cells and sampling of poor cells to enhance the accuracy rate of aspiration biopsy cytology.

In conclusion, aspiration biopsy cytology is of great value in making a diagnosis of small-sized breast cancer as far as the substitute for aspiration biopsy cytology is not developed.

References

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