Quantity Insufficient Lesions in Ultrasonography-guided Fine-needle Aspiration Cytology of Breast Lesions

CKK Wong, SLA Fung
Department of Radiology, Tuen Mun Hospital, Tuen Mun, Hong Kong

ABSTRACT
Objective: To reassess ‘quantity insufficient’ fine-needle aspiration cytology breast lesions and explore ways to minimise such reporting.
Methods: Ultrasonography-guided fine-needle aspiration cytology of breast lesions performed in 2009 and labelled ‘quantity insufficient’ were reviewed. The nature and size of lesion, the fine-needle aspiration cytology needle size, the number of passes, years of sampling experience of the respective radiologist, and outcome of the lesion / patient were assessed.
Results: A total of 593 women, having 673 breast lesions of Breast Imaging–Reporting and Data System of R2 or above, underwent ultrasonography-guided fine-needle aspiration cytology during the defined period. In all, 88 lesions (all hypoechoic) in 76 women (24-78 years old) with at least one ‘quantity insufficient’ report in 2009 were identified. Most fine-needle aspiration cytology was performed by two passes with a 22G hypodermic needle. All were performed by radiologists with experience in such biopsies ranging from 1 to more than 10 years. Most lesions were 5 mm to less than 10 mm in size. The fine-needle aspiration cytology reported as ‘quantity insufficient’ had a rate of 15%, and the mean number of aspiration attempts for each lesion was 1.8. Five lesions eventually underwent core biopsy or excision. Of the 88 lesions, 40 (45%) were benign lesions, 12 (14%) were cysts, and 3 (3%) were fat lobules. Based on interval ultrasounds, 20 (23%) of the lesions were static or shrunken, and 5 (6%) were not found; the remainders were pending interval ultrasound.
Conclusion: The rate at which ultrasonography-guided fine-needle aspiration breast lesion cytology reported as ‘quantity insufficient’ could be minimised by remarking the nature of lesion, modifying the method of sampling, and maximising interdepartmental communication. More than 90% of ‘quantity insufficient’ lesions were eventually found to be benign or static on repeated fine-needle aspiration cytology or follow-up.

Key Words: Biopsy, fine-needle; Breast neoplasms; Mammography; Predictive value of tests; Stereotaxic techniques
INTRODUCTION

Breast lesions are characterised according to the Breast Imaging–Reporting and Data System (BI-RADS). Ultrasonography (USG)–guided fine-needle aspiration cytology (FNAC) of breast lesions were labelled ‘quantity insufficient’ (QI) at a rate of 8 to 34%. The current study aimed to reassess breast lesion specimens obtained by FNAC that were reported as QI and explore ways to minimise the ‘QI’ reporting rate.

METHODS

All the records of patients with breast lesions investigated by USG-guided FNAC in the Department of Radiology in Tuen Mun Hospital, Hong Kong from 31 December 2008 to 29 December 2009 were retrospectively reviewed. All lesions with at least one FNAC performed during that period with a pathology report stating QI were included. Lesions with a definitive histopathology result and those biopsied by core needle and stereotactic guidance were excluded. None of the lesions with USG or a stereotactic-guided core needle had QI result. The initial and follow-up USG reports, USG-guided FNAC reports, and cytology forms and reports were reviewed. The size of the respective breast lesions, USG features, FNAC needle sizes, number of repeated FNAC attempts, nature of each lesion, years of experience of the responsible radiologist, and lesion / patient outcome were retrospectively reviewed.

The cytology result was assessed by pathologists according to accepted criteria:

- C1: insufficient cells for cytological analysis
- C2: cells present all benign; no suspicious features
- C3: cells suspicious but probably benign
- C4: cells suspicious but probably malignant
- C5: definitely malignant

Lesion outcomes were determined by cytology results, lesion characteristics and size on follow-up ultrasounds, and review of the cases in clinical radiological histopathological meetings (CRHMs). Possible outcomes included being benign (by cytology), cysts (reported on cytology or after FNAC), fat lobules (suspected on USG), not detectable on follow-up ultrasounds and those pending follow-up imaging.

RESULTS

A total of 593 women, with 673 breast lesions of BI-RADS category R2 or above, underwent USG-guided FNAC during the defined period. There were 102 lesions reported as QI from 88 breast lesions (Table 1). All the lesions were hypoechoic, and identified in 76 women.

Table 1. Summary of the number of breast lesions underwent FNAC, QI lesions, and patient selection in 2009 in Tuen Mun Hospital.*

<table>
<thead>
<tr>
<th>Summary</th>
<th>No.</th>
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<tbody>
<tr>
<td>Patients who underwent FNAC of breast lesions</td>
<td>593</td>
</tr>
<tr>
<td>Breast lesions for FNAC</td>
<td>673</td>
</tr>
<tr>
<td>Breast lesions that had at least one QI result</td>
<td>88</td>
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</table>

Abbreviations: FNAC = fine-needle aspiration cytology; QI = ‘quantity insufficient’; USG = ultrasonography; CRHM = clinical radiological histopathological meeting.

* All USG-guided breast FNAC from 31 December 2008 to 29 December 2009; data collection includes all CRHM-discussed cases, breast USG / FNAC reports, and cytology reports.