

Comparison of Unsatisfactory Aspirates in Fine Needle Aspiration Performed by Surgical Medical Officers and Pathologists

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Abstract

The evaluation of fine-needle aspiration cytology (FNAC) is based on a satisfactory cell yield, which is highly operator-dependent. The aim of this study was to compare the proportion of unsatisfactory aspirates obtained by surgical medical officers and pathologists. FNAC case reports were retrospectively reviewed and cases grouped according to organ/site and person who performed the FNA procedure. An aspirate was deemed 'adequate' when a diagnostic report was issued; and 'unsatisfactory' when a report contained terms such as 'unsatisfactory sample' or 'inadequate cellularity for interpretation'. The results showed of a total of 1,248 FNAC reports reviewed, 610 (48.9%) aspirations were performed by medical officers and 638 (51.2%) by pathologists. The most common organs subjected to FNA were breast (68.9%), thyroid (17%), lymph node (9.3%) and others (salivary glands and soft tissue lumps) (4.8%). The overall proportion of unsatisfactory aspirates was 16.7%. Of aspirates performed by medical officers, 26.4% were unsatisfactory compared to 7.5% obtained by pathologists ($P < 0.001$). Pathologists had significantly lower proportion of unsatisfactory aspirates in all organs compared to medical officers. Thyroid lesions had the highest number of unsatisfactory aspirates when performed by medical officers. Hands-on training in aspiration techniques for medical officers and the use of cytospin smears and cell block in bloody thyroid aspirates will be conducted.

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Key Words : Fine-needle aspiration, unsatisfactory aspirate.

Introduction

Fine needle aspiration cytology (FNAC) is a common investigation in the diagnosis of superficial lumps. Breast, thyroid and lymph nodes are the most common organs subjected to the procedure. When the pathologist is able to make a diagnosis based on satisfactory aspirates, this aids the clinician in managing the patient appropriately.

The adequacy of fine needle aspiration is of crucial importance to the cytopathologist in rendering an accurate report. Satisfactory aspirates contain adequate material for study and are dependent on correct technique and processing, as well as the nature

of the lesion itself. The former is operator dependent.

At our institution the pathologists perform all fine needle aspirations. We also receive fine needle aspirates performed by surgical medical officers from a nearby hospital. These medical officers are not formally trained in FNAC techniques. We noticed that a substantial number of these aspirates were unsatisfactory in terms of cellular yield.

The aim of this study was to determine the overall rate of unsatisfactory FNAC aspirates, and to compare sample adequacy between FNAC performed by medical officers and pathologists. We also sought to determine which organ lesion yielded the most

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number of unsatisfactory aspirates and suggest ways to overcome this.

Materials and Methods

FNAC case reports were retrospectively reviewed at our diagnostic laboratory. The laboratory number, organ/site of FNAC and person who performed the FNAC procedure (pathologist or medical officer) were recorded.

An aspirate was deemed to be 'adequate' when there was issuance of a diagnostic report. An aspirate was termed 'unsatisfactory' when a case was reported as 'unsatisfactory sample' or 'inadequate cellularity for proper interpretation'. Patients who had more than one lesion subjected to FNAC were counted as the total number of FNAC done on the patient. All FNAC aspirates were subjected to routine Giemsa, Papanicolaou and/or Haematoxylin & Eosin stain, depending on the preference of the pathologist in charge.

Cases were grouped by organ/site and by the person performing the aspiration. The overall proportion of unsatisfactory aspirates was determined. The proportion of unsatisfactory aspirates between the two groups performing the FNAC i.e. medical officers and pathologists was determined. The proportion of unsatisfactory aspirates in the various organ/site was also determined.

Observations

Of a total of 1,248 FNAC aspirations reviewed, 610 (48.9%) were performed by medical officers and 638 (51.2%) by pathologists. The most common organ aspirated was breast, followed by thyroid, lymph node and others (salivary gland, subcutaneous and soft tissue swellings).

The overall proportion of unsatisfactory aspirates was 16.7% (209/1248 aspirates) (CI 14.7, 18.9). Of aspirates performed by medical officers 26.4% (161/610 aspirates) were unsatisfactory compared to 7.5% (48/638 aspirates) obtained by pathologists.

The details of organ/site and proportions of unsatisfactory aspirates are detailed according to the two groups in Table 1. The overall proportion of unsatisfactory aspirates based on organs was as follows: breast – 17%, thyroid – 15.1%, lymph node – 11.2%, others – 16.7%. In the aspirates performed by medical officers, aspirations from the thyroid had the highest proportion of unsatisfactory smears.

Discussion

The results of this study demonstrate the superior

Table 1 : Comparison of unsatisfactory aspirates in organs and person performing fine needle aspiration

Organ/Site	Number of unsatisfactory aspirates obtained by medical officers (%)	Number of unsatisfactory aspirates obtained by pathologists (%)
Breast n = 860	118/475 (24.8%) (CI: 21.0, 29.0)	28/385 (7.3%) (CI: 4.9, 10.3)
Thyroid n = 212	25/60 (41.7%) (CI: 29.1, 55.1)	7/152 (4.6%) (CI: 1.9, 9.2)
Lymph node n = 116	10/47 (21.3%) (CI: 10.7, 35.7)	3/69 (4.4%) (CI: 0.9, 12.2)
Others n = 60	8/28 (28.6%) (CI: 13.2, 48.7)	2/32 (6.2%) (CI: 0.8, 20.8)

CI – Confidence interval

quality of aspirates performed by pathologists compared to surgical medical officers. This is in concordance with other studies that report a range of 14% - 29.5% unsatisfactory aspirates obtained by surgeons or clinicians compared to 3% – 9.5% obtained by pathologists.¹⁻³

A pathologist has better experience in terms of having had formal training and performing a greater number of FNAC compared to clinicians. As pathologists evaluate their own aspirates microscopically, they inadvertently go through an upward learning curve which ultimately improves their aspiration technique that gives a good cell yield. Naturally certain lesions are deemed to result in pauci or acellular aspirates which include cystic lesions, hemorrhage into an organ or a fibrotic lesion. These poor cell yields cannot be much improved.

In view of the limited number of pathologists in the country, many hospitals rely on medical officers in the surgical unit to perform FNA on their patients. These medical officers are not formally trained in FNA techniques. To rectify this situation, the authors intend to provide hands-on training in aspiration techniques to medical officers. The study also showed that thyroid lesions appeared to give the poorest cell yield in aspirations performed by medical officers. We hope to evaluate the role of cytospin smears and cell block in bloody thyroid aspirates with the aim of improving cell yield.

In conclusion, pathologists had a significantly lower proportion of unsatisfactory fine-needle aspirates compared to those obtained by surgical medical officers. Hands-on training for medical officers in aspiration techniques and the use of other laboratory techniques to improve cellular yield will be further conducted and studied.

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