

Original Research Article

Audit of repeat fine needle aspiration in cytopathology laboratory

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Abstract

Background: FNAC is cost-effective, high diagnostic accuracy, reliable, rapid and inexpensive procedure in diagnosis of various clinically palpable as well as deep seated swellings. This study was intended to discover factors associated with repeat aspiration with the help of audit of cytology laboratory.

Material and methods: Retrospective study of 248 cases which came to Cytology Laboratory of Dhiraj Hospital during the period of 1st January 2013 to 30th December 2013 had included. All patients who attended the Cytology laboratory for the FNAC procedure and USG guided FNAC were included in the study. Data for the audit was collected from the cytology records. The following information was documented for this audit: Age and sex, site of FNAC, documented reasons for repeat and patient IPD/OPD numbers. We had also noted the documented reasons for repeats and the duration between the repeats.

Results: Out of 248 aspirations, 61 from breast swellings, 75 from the lymph nodes, 58 from the thyroid lesions, and 54 were from the miscellaneous lesions. 31 patients (12.5%) were advised repeat aspiration and 22 (8.87%) were actually repeated. In our study the most common cause for the repeat aspiration was inadequate cellularity (51.61%). Outcome of the repeat aspirations included 16 (72.73%) diagnostic and 6 (27.27%) non diagnostic aspirations.

Conclusion: In our study, there were so many reasons for the repeat aspirates. In order of occurrence these are: Inadequate aspirates, non-diagnostic descriptive reports and hemorrhagic aspiration.

Key words

FNAC, Cytopathology, Audit, Repeat.

Introduction

FNAC is cost-effective, high diagnostic accuracy, reliable, rapid and inexpensive procedure in diagnosis of various clinically palpable as well as deep seated swellings. Nowadays Fine needle aspiration cytology (FNAC) is used routinely as a first-line diagnostic test. It is not only useful in the diagnosis of various lesions but can also help in deciding on appropriate management. In few cases there may be need of repeat FNAC procedure. Because of repeat FNAC procedures the patient may feel tension and the pathologist have to face needless workload. Therefore, this study was intended to discover factors associated with repeat aspiration with the help of audit of cytology laboratory [1-6].

Material and methods

Prior approval of Sumandeep Vidyapeeth Institutional Ethical Committee had taken. Retrospective study of 248 cases which came to Cytology Laboratory of Dhiraj Hospital during the period of 1st January 2013 to 30th December 2013 had included. All patients who attended the Cytology laboratory for the FNAC procedure and USG guided FNAC were included in the study. FNAC was performed at cytology clinic using a 22-guage needle attached to a 10 ml syringe [7-12]. Data for the audit was collected from the cytology records. The following information was documented for this audit: Age and sex, site of FNAC, documented reasons for repeat and patient IPD/OPD numbers. The data was classified by organ system, by months, by week of the month. We had also noted the documented reasons for repeats and the duration between the repeats. Proportions of repeated aspirates and documented reasons for repeated aspiration (non-diagnostic descriptive reports, inadequate aspirates, and pathologist's recommendation) were taken as outcome measures. We had entered the data in already prepared data sheet and then entered in an Excel spreadsheet and analyze statistically.

Results

Total 248 patients of Dhiraj General Hospital were subjected to FNAC from various departments of Dhiraj General Hospital during one year duration. (**Table – 1**) Out of 248 aspirations, 61 from breast swellings, 75 from the lymph nodes, 58 from the thyroid lesions, and 54 were from the miscellaneous lesions. (**Table – 2**) 31 patients (12.5%) were advised repeat aspiration and 22 (8.87%) were actually repeated. (**Table – 1**) The advised repeat aspiration were reported as –‘smears show blood only - Please repeat’ or ‘Inadequate cellularity - Please repeat.’ Or there was a descriptive non diagnostic report. In our study the most common cause for the repeat aspiration was inadequate cellularity (51.61%). (**Table – 3**) Outcome of the repeat aspirations included 16 (72.73%) diagnostic and 6 (27.27%) non diagnostic aspirations. (**Table – 4**)

Table – 1: Month wise requests for repeat and actually repeated FNAC of a year.

| Month | Total FNAC | Requests for repeat | Aspirates actually repeated |
|-----------|------------|---------------------|-----------------------------|
| January | 28 | 3 | 1 |
| February | 15 | 5 | 3 |
| March | 12 | 2 | 2 |
| April | 23 | 3 | 2 |
| May | 21 | 2 | 2 |
| June | 18 | 1 | 1 |
| July | 26 | 2 | 1 |
| August | 24 | 4 | 3 |
| September | 20 | 3 | 1 |
| October | 19 | 2 | 2 |
| November | 22 | 3 | 3 |
| December | 20 | 1 | 1 |
| Total | 248 | 31 (12.5%) | 22 (8.87%) |

Discussion

Fine Needle Aspiration Cytology (FNAC) is a simple and rapid diagnostic technique. Because of early availability of results, simplicity, minimal trauma and complications, the aspiration

cytology is now considered a valuable diagnostic aid. Pathology audits center on uses, cost-effectiveness, adequacy, and quality improvement of laboratory procedures. Fine needle aspiration cytology (FNAC) audits have focused mainly on diagnostic efficacy of the procedure in different organs such as breast [13], thyroid [14], lymph nodes [15], and salivary glands [16].

Table – 2: Organ wise requisitions for repeat aspiration.

| Organ | Total FNAC | Repeat FNAC | Repeat FNAC (%) |
|---------------|------------|-------------|-----------------|
| Breast | 61 | 8 | 25.80 |
| Lymph node | 75 | 7 | 22.58 |
| Thyroid | 58 | 11 | 35.48 |
| Miscellaneous | 54 | 5 | 16.13 |
| Total | 248 | 31 | 100 |

Table – 3: Distribution of repeat aspiration according to reason.

| Reasons | No of repeat aspiration | % |
|-----------------------------------|-------------------------|-------|
| Inadequate cellularity | 16 | 51.61 |
| Smears with only blood | 7 | 22.59 |
| Descriptive non diagnostic report | 8 | 25.80 |
| Total | 31 | 100 |

In the present study, we had done audit of repeat fine needle aspiration in a cytopathology laboratory. Repeat aspirates may be essential because inadequate material for microscopy is obtained after the first, or following attempts. Other investigators have found that experience of aspirators is important for adequacy of material [17].

In study by Bukhari M H, et al. concluded that the frequency of inadequacy declined from 86 to 18, and 2 for first, second and third attempts, respectively. The number of repeats increased the

diagnostic precision of aspirates which is statistically significant [18].

Table – 4: Month-wise record of outcome of repeat aspirates.

| Month | Repeated aspirates actually | Diagnostic | Non diagnostic |
|-----------|-----------------------------|----------------|----------------|
| January | 1 | 1 | 0 |
| February | 3 | 2 | 1 |
| March | 2 | 1 | 1 |
| April | 2 | 2 | 0 |
| May | 2 | 1 | 1 |
| June | 1 | 0 | 1 |
| July | 1 | 1 | 0 |
| August | 3 | 2 | 1 |
| September | 1 | 1 | 0 |
| October | 2 | 1 | 1 |
| November | 3 | 3 | 0 |
| December | 1 | 1 | 0 |
| Total | 22 | 16 (72.73%) | 6 (27.27%) |

In our study inadequate cellularity was the most frequent cause for repeat aspiration because ours is a teaching hospital, where patients are referred from all the hospital departments to a cytology clinic. During the period of the audit the cytopathology team would have typically comprised of a consultant and residents with varying experience. Resident doctors learn the skills of FNAC on the job, on real patients. Inexperience of the aspirator may result in inappropriate patient selection, or choice of lesion for the procedure. Often, however, the most experienced aspirator may be unable to obtain diagnostic material from an aspirate.

We had noted that a monthly difference in the numbers of requests for repeat aspiration (Table – 1). Perhaps the change in postings of residents was accountable for much of this difference. If a careful combination of experienced residents and their effective training, perhaps the difference might be reduced. Few of the investigators have

found that training of new personnel is important to decrease the inadequacy rate [19].

Repeat requests were audited according to organ system (**Table – 3**). In our study the major extent (35.48%) of repeats were requested for thyroid aspirates. Other investigators have also found that the most significant reason of inadequate material in thyroid aspirates is inadequate sampling [20]. This may be due to inexperience of the aspirator, cystic or hemorrhagic lesions, number of punctures, and method of preparing the smears [21]. Aspiration of thyroid lesions is habitually regarded as complex. The thyroid, being vascular, must be approached another way from other organs [22]. Investigators who have attempted the non-aspiration method found that it yielded more diagnostic material with less blood and more cells [23]. Correct positioning of patient, adequate fixing of lesion and single pass is ideal for vascular organs like thyroid. Fewer patients need thyroid aspirates ($n = 415$). While each resident may perform many aspirates from other organs in a given day, the chance for a thyroid aspiration likely take places no more than once or twice a week. A probable remedy might be to assign separate days dedicated to thyroid aspiration, so that the residents can obtain a better exposure to the procedure. A thyroid clinic dedicated to triple diagnosis with a physician, a radiologist to help with ultrasound guided aspirates, and a cytopathologist would really be welcome [24, 25]. With use of this we can reduce the number of repeat aspirations from the thyroid lesions.

The second organ for the repeat Aspiration was breast lumps. In few of the studies investigators have noted that insufficient material in breast aspirates is also due to inappropriate patient selection and inexperience of aspirator [13, 17].

Inadequate aspiration was the most common documented reason for repeat; however, in a small proportion (3.8%) no reason was mentioned. There was only descriptive report without any diagnostic impression and few reports didn't mention any reason for the repeat

aspiration. It's true that a cytopathology report that does not give a reason for a repeat request is mistaken, [26] or incomplete, and reflects indecision. Conversely, claim on documenting a reason for every repeat requested may restrict the cytopathologists' options, and liberty of expression [20]. In our study outcome of actually repeated aspirates includes diagnostic (72.73%) and non diagnostic (27.27%) which was comparable with the study by Goyal, et al. [27].

Every cytology laboratory should develop a policy to stay away from large numbers of repeat aspirations. Assessment for the cellularity of the aspirates on-site permits re-aspiration at a single setting. If the first re-aspiration is non-diagnostic than one should move towards alternative diagnostic modalities of ultrasound guided aspiration or biopsy.

Conclusion

In our study, there were so many reasons for the repeat aspirates. In order of occurrence these are: Inadequate aspirates, non-diagnostic descriptive reports and hemorrhagic aspiration. We can reduce the number of repeat aspirates and extra work by training the residents and by assigning separate days for thyroid aspirations.

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