



Original Research Article

Diagnostic Accuracy of Fine Needle Aspiration Cytology and Fine Needle Sampling without Aspiration in Patients, Attending In Tertiary Care Hospital, at Bettiah, West Champaran, Bihar

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Abstract

Objective: The present study was conducted to compare the Diagnostic adequacy and accuracy of Fine Needle Aspiration Cytology (FNAC) and Fine Needle Sampling (FNS) without aspiration.

Materials and Methods: A total of 86 patients (32 male and 54 female) between the ages of 6 years to 65 years were studied.

Results: out of total 86 cases sampled, FNAC could give a diagnosis in 67 cases (79%) whereas FNS could do so in 65 cases (75.6%).

Conclusion: FNS scored over FNAC in the total scores of all the cases and in the average score per cases and the difference was statistically significant. However for individual group of lesion the scores were not significantly different between the two techniques. After confirmation by histopathology the overall diagnostic accuracy by FNS was 75.6% and that by FNAC 79%.

Keywords: Fine Needle Aspiration Cytology (FNAC) Fine Needle Sampling without Aspiration (FNS), Smear, Breast lesion, Hemorrhage, Hematoma.

Introduction

Fine Needle Aspiration Cytology (FNAC) has already gained immense popularity, since it is easy to perform, quickly and has a high degree of specificity and sensitivity. However it requires certain paraphernalia like disposable syringes with needles and syringe holders too. The technique depends upon suction and thus is at time painful, much time traumatic and can cause hematoma, as well as yield hemorrhagic material for cytological study. In more recent times a modified techniques

called Fine Needle Sampling without aspiration (FNS) has come into vogue. This technique obviates the use of suction and depends solely on capillary action of the fine needle and is therefore much less painful, much less traumatic and thus much more patient friendly. As this technique doesn't require syringe holder so this technique is more useful in remote and peripheral area where syringe holders are unavailable. In the present prospective study of 86 patients, an attempt was made to compare the two techniques with

reference to diagnostic adequacy and diagnostic accuracy.

Materials and Methods

The present study was conducted in the Department of Pathology, Government Medical College, Bettiah, West Champaran, Bihar, during the periods of June 2017 to December 2018. A total of 86 patients (32 male 54 female) between 6 years to 65 years of age were included, in which both techniques were done at the same site as far as possible. In the 5 cases due to poor adequacy of materials they are excluded. FNS was performed with a 23 or 24 G disposable needle by first fixing the swelling with one hand and then by inserting the needle followed by movement of the needle within the swelling in different directions. After withdrawing the needle, it was attached to a syringe filled with air and the material expressed on clean dry slides. Smears were prepared by the usual methods and stained by MGG and Papanicolaou stains. FNAC was performed by the conventional method. On an average, with the FNS method 3 smears could be prepared for each case whereas with the FNA method 5 smears could be prepared for each case.

After adding up all the scores, a total average score per case as well as average score for each parameter in each case were obtained.

Results

Lymph Node Lesions: Out of the 30 cases sampled, in 26 cases (86.66%) It was possible to give a diagnosis by FNS while with FNA diagnosis was possible in 28 cases (93.33%). FNA scored marginally over FNS in all the parameters except for amount of cellular material which was more or less equal with both the technique. Although the total scores and average scores per cases by FNS were slightly higher than by FNA, the difference was not statistically significant. After confirmation with histopathology, the diagnosis accuracy was 86.66% by FNS and 93.33% by FNAC.

Thyroid Lesion: Out of the 26 cases sampled, FNS could give a diagnosis in 22 (84.61%) while FNA could do so in 21 cases (80.76%). FNS scored over FNA in all the parameters and the average score per case as well as the total scores were higher. But the difference was statistically insignificant. After confirmation with histopathology, the diagnostic accuracy with FNS was 84.61% whereas with FNA it was 80.76%.

Breast Lesions: Out of the 18 cases sampled, FNS could give a diagnosis in 13 cases (72.22%) while FNA could do so in 16 cases (88.88%). In contrast to lesions of the lymph nodes and thyroid, in case of breast lesions, FNA scored over FNS in all the parameters except background blood. The average score per case as well as the total score were marginally higher for FNA than for FNS, although the difference was not statistically significant. After confirmation with histopathology wherever available, the diagnostic accuracy with FNS was 72.22% and that with FNA 88.88%

Salivary Gland lesions: There were only 4 cases in this group. FNS scored marginally over FNA with reference to background blood and retention of architecture, whereas the amount of cellular material was slightly better with FNA, the degree of cellular degeneration and cellular trauma were the same with both the techniques. As regards the average scores were only 1 case compared with histopathology, both FNS and FNAC could diagnose them correctly, giving 100% diagnostic accuracy by both the techniques.

Miscellaneous lesions: Out of the 3 cases in this group, in both FNS and FNAC could give the diagnosis. The scores were slightly higher for FNS than for FNA but the difference were statistically not significant.

Overall observations: Thus, out of the total 86 cases sampled. FNS could give a diagnosis in 65 cases (75.6% whereas FNAC could do so in 67 cases (79%) FNS scored over FNA in the average score per case and the difference was statistically significant. However for individual group of lesions, the scores were not significantly different

between the two techniques. After confirmation by histopathology the overall diagnostic accuracy

by FNS was 75.6% and that by FNA 79%.

Table Shows Comparative Study of FNS and FNAC

Sample taken from Lesion	No. of cases	FNS	FNAC
Lymph Node	30	26 (86.66%)	28 (93.33%)
Thyroid	26	22 (84.61%)	21 (80.76%)
Breast	18	13 (72.22%)	16 (88.88%)
Salivary Gland	4	4 100%	4 100%
Miscellaneous	3	Not Sampled	Not Sampled
Inadequate Material	5	Not Done	Not Done
Total Lesion Sampled	86	65 (75.6%)	67 (79%)

Discussion

The present study was undertaken to compare the efficacy of both FNAC and FNS techniques with regard to the method itself and those related to the quality and quantity of material obtained by each technique. FNS allows greater ease of sampling with better control of the hand during the procedure and a good perception of the lesion (Kate MS et al. 1998). In the present study too, FNS was easier to perform than FNA. Further with FNS more precise entry into the mass is possible particularly important in locations like thyroid and orbit, to avoid injury to the trachea and eye ball respectively (Rajshkhar A et al. 1991).

Although both the techniques use syringe and needle, in FNS the syringe is used to expel the material after the procedure is completed where in FNA it is used to create a suction force to aspirate the cells into the needle (Rajshkhar A et al. 1991). A fresh sterile syringe is therefore not necessary for FNS, thus reducing the cost of procedure. The patient also would be much less apprehensive when a large syringe, a syringe holder are not seen. Thus FNS obviously more patient and user friendly (Misra M et al. 2001, Kumarasinghe MP et al. 1995).

Thus FNS is expected to produce less hemorrhage as cellular material is obtained by mere capillary action rather than suction due to negative pressure (Dey P et al. 19993). In the present study too, except for breast lesions, FNS of other sites

produced much less background blood in the smears, the cellular architecture was well preserved and the cellular trauma much less. These observations were similar to those of earlier workers (Rajshkhar A, 1991, Akhtar M et al, 1989, Ghosh et al. 2000) who found that FNA smears were in general, diagnostically adequate and more superior.

As regards to Lymph node lesions in the present study, FNS could give a diagnosis in 86.66% of cases while FNA could do so in 93.33% of cases. Rajshkhar et al (1991) had obtained comparable diagnostic material with both the techniques while Dey and Ray (1993) had noted that FNS could give diagnosis in more cases (95.34%) than FNA (81.4%) with reference to lymph node lesions. When the different criteria were considered for lymph node lesions in the present study, FNS scored over FNA in all the parameters except for cellularity which was much better for FNA. Similar results were obtained by some of the earlier workers (Kumarasinghe MP et al. 1995, Misra M et al. 2001). In two cases in the present study, there was diagnostic discrepancy between the two techniques, the FNS diagnosis was reactive lymphadenitis while the FNA diagnosis was granulomatous lymphadenitis. They could be attributed to a mere geographic miss of lesion by FNS (Rajshkhar A 1991). For the diagnosis of malignant lymphomas, FNS smears were certainly more superior to FNA smears.

In the diagnosis of thyroid lesions, the present study noted that FNS was much better in giving a diagnosis (84.61%) than FNA (80.76%). FNS smears were much more diagnostically superior than FNA smears an observation similar to that of some previous workers (Kumarasinghe MP et al. 1995, Santos JEC et al. (1988) However Dey and Ray (1993) obtained better scores for FNA smears than for FNS smears although the difference was not statistically significant. It should be remembered that whether it is FNS or FNA, thyroid cytology samples are inevitably bloody. Rather, in FNS samples the effect of blood on the smear quality is minimized since spontaneous capillary action is the principle of the FNS. The higher diagnostic accuracy of FNS (84.61%) than FNA (80.76%) obtained in the present study was similar to that seen by Jayaram et al. (1991).

In the ultimate analysis, when all the 86 cases were considered together FNA could give a diagnosis in 67 (79%) whereas FNS could do so in 65 cases (75.6%). This is at variance to the results observed by previous worker (Rajasekhar A et al 1991) who found better results with FNS.

Conclusion

Finally to conclude, whereas FNS offers the distinct advantage of diagnostically better quality smears. FNA assures diagnostically adequate material quantitatively, While FNS is advantageous in some situations, FNA scores over FNS in some cases. Both could be supplementary on many Occasions but could be substitute in few.

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