

Original Article

A Survey of Practice Patterns of Fine Needle Aspiration among Junior Doctors in Lagos, Nigeria

Malami SA*, Ojo B⁺, Nnoli M[#], Onyiaorah VI[#], Anunobi C[#]

Abstract

Fine needle aspiration (FNA) cytology is a rapid and inexpensive screening test for cancer and its precursors but the technique is underutilized in Nigeria because clinicians are ignorant of its many advantages. A cross sectional descriptive study was undertaken using a pre-tested close and open-ended interview questionnaire administered on 44 junior doctors in the Lagos University Teaching Hospital (LUTH) a prominent training institution in Nigeria to highlight their general knowledge, perceptions and utilization of the technique.

The response rate in this survey was 55 %. Awareness of the FNA among the respondents was high and knowledge of its principal indications, cost effectiveness and limitations was quite good. But there are important gaps in the other aspects of their knowledge of the technique which might explain why so many (50 per cent) had the wrong attitude to its adoption as a first line investigative procedure, particularly with respect to obvious misconceptions about its accuracy and safety. Significantly, many of the junior doctors were unaware of the places of imaging (50 %) and molecular studies (25 %) in routine FNA practice.

In our opinion this study has highlighted the need for more physicians' training in FNA in Nigeria. Being a technique that is easily adapted to conditions in the developing countries, it is hoped that this simple test would be used more often in future for pre-operative diagnoses in this and other developing nations.

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Key Words : Aspiration, cytology, perception, clinicians, Nigeria.

Introduction

Fine needle aspiration (FNA) cytology is an inexpensive, simple and rapid method of obtaining pathological diagnoses that is particularly suitable for use in the resource-poor settings.¹ The FNA had its origins at the Karolinska Institute and Radiumhemmet in Sweden from where it spread to the Memorial Sloan-Kettering Cancer Center and the rest of the world in the 1950s. After a period of relative obscurity, the technique was re-introduced via Scandinavia and had continued to grow in prestige and importance among the diagnostic armamentarium in Europe and North America.^{2, 3}

Since its introduction to Nigeria, use of the FNA had remained generally low and essentially restricted to a small number of academic medical centers and tertiary hospitals where it is practiced by pathologists and clinicians many of whom had had little formal training in cytology.^{4,9} In fact, the actual number of pathologists able to interpret FNA in the whole country is unknown but they are believed to be few, as not all pathologists combine surgical pathology reporting with aspirations and exfoliative cytology. Additionally, no International Academy of Cytology (IAC) accredited training laboratories exists in this developing nation, though training in diagnostic cytology including FNA is a mandatory aspect of

*Bayero University, Kano, Nigeria, ⁺University of Ilorin, Nigeria, [#]Lagos University Teaching Hospital, Nigeria.

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Corresponding Author: Dr S A Malami, Department of Histopathology, AKTH PMB 3452, Kano 700001, Kano State, Nigeria

E-mail: malamisa@yahoo.co.uk

residency and it is recognized as a subspecialty of pathology in the West African and National Postgraduate Colleges. The result had been pervasive shortages in skilled cytopathologists and technologists. As a consequence of these shortcomings, the procedure had not attained the recognition it deserves in the country. Given that a number of publications had highlighted the simplicity, cost-effectiveness and sensitivity of the FNA in the hands of Nigerian pathologists, it is a surprise that its acceptance had been this slow. Nevertheless no surveys of clinicians had been done to determine the causes. The relative underutilization of the FNA in Nigeria suggests that physicians are ignorant of it and receive inadequate training in its rudiments. With this in mind, the present study set out to establish the knowledge, utilization and limitations of FNA among junior doctors at the Lagos University Teaching Hospital both to address these concerns and to facilitate the teaching of FNA cytology. Data obtained from the present exploratory study would be used to plan for a larger nationwide follow-up study that would focus on knowledge, attitude and practices of FNA among doctors practicing in all training institutions in Nigeria.

Materials and Methods

In the month of January 2004 eighty standardized questionnaires were distributed to junior doctors employed at the Lagos University Teaching Hospital, Nigeria. The study population was junior doctors (those undergoing residency training and or non-specialists) who consented to participate in the study. Research tool was a pre-tested, open and close-ended self-administered questionnaire that was used to obtain information on the socio-demographic characteristics of the respondents; their attitudes, perceptions and knowledge of fine-needle aspiration, including its indications, operations and limitations in relation to their own practices. In other sections the questions addressed utilization of the test, training needs and prospects for FNA in general. Most of the qualitative information obtained was transformed to numeric data by systematic grading and assignment of numeric values to facilitate comparison and calculation of frequencies. Thus, responses to questions on each part of the questionnaire were given a score of one point each if answered correctly. No point was given for wrong answers. Based on this grading system, a total of 9 points were allocated to the section on knowledge of FNA, such that those who scored 7-9 points were considered as having

good knowledge; those with 4-6 points had fair knowledge; while a score of 0-3 was considered as representing poor knowledge. Other sections which dwelt on benefits, operators and indications for FNA were graded in the same way as the grading of knowledge. For open ended questions, responses with similar meanings were aggregated to reduce diversity of answers. The data generated was collated and analyzed. Microsoft Office Word 2003 in Windows XP software was used in constructing simple frequency tables.

Results

Socio-demographic characteristics

Forty-four completed questionnaires were received from the participants out of a total sample of eighty, representing a response rate of 55 percent. The age and gender distribution is shown in Table 1. The respondents were made up of 33 (seventy five percent) males and 11 (twenty five percent) females. The mean age was 27.3 ± 8.5 years (range, 23-42 years). Majority of the doctors in the group graduated between 1991 and 2000. They were drawn from different specialties in the hospital, principally, paediatrics (7), internal medicine (5) surgery (5) and laboratory medicine (4).

Knowledge

The respondents exhibited adequate knowledge of the meaning and major advantages of the FNA (Table 2). Overall, more doctors in laboratory medicine

Table 1 : Sociodemographic characteristics of respondents (n = 44)

Feature	Frequency	Percentage
Age (years)		
Not stated	1	2%
21-30	19	43%
31-40	22	50%
41-50	2	5%
	44	100%
Sex		
Male	33	75%
Female	11	25%
	44	100%
Rank		
House officer	8	18%
GDMO	5	12%
SHO	6	14%
Registrar	9	20%
Senior registrar	16	36%
	44	100%

Table 2 : Knowledge of FNA among junior doctors in LUTH

Question	Correct		Wrong	
	response	(%)	response	(%)
1. What is FNA?	44	(100 %)	0	(0 %)
2. Is it minimally invasive?	44	(100 %)	0	(0 %)
3. Is it cost effective?	40	(91 %)	4	(9 %)
4. Can it differentiate benign and malignant lesions?	38	(86 %)	6	(14 %)
5. Is it synonymous with Trucut?	42	(95 %)	2	(5 %)
6. Is anaesthesia necessary?	35	(80 %)	9	(20 %)
7. Can it be done under image guidance?	22	(50 %)	22	(50 %)
8. Can ancillary test be done?	11	(25 %)	33	(75 %)
9. Are complications frequent?	28	(64 %)	16	(36 %)

(100%) exhibited an excellent knowledge of the principal indications, advantages and limitations of FNA compared to their colleagues in other specialties including paediatrics (57%) internal medicine (80%) and surgery (60%). However, these differences were not statistically significant. Of the doctors sampled, 91 and 86 per cent respectively knew that the FNA is cost effective and can be confidently used to differentiate cancer from benign growths. However, 2 clinicians felt FNA and Trucut needle biopsy were synonymous. Significantly, 9 (20 per cent) were of the wrong opinion that some form of anaesthesia is essential for FNA. Thirty eight of the doctors were able to list the usual operators of FNA correctly. The remainder gave inaccurate answers (4) or left that aspect of the questionnaire blank (2). Table 2 shows that a quarter and one half of all the respondents respectively did not think there is a place for ancillary investigations or were unaware of the place of image-assisted aspiration in FNA.

Attitudes

In the view of 37 respondents they would consider a patient for FNA if the presenting complaint is a palpable superficial lump. However, 10 (22.7 %) of the respondents felt FNA should be reserved for exceptional use in patients in whom changes are noticed in the lump. This reflects a wrong attitude which is not helped by the limited sources of information on FNA available to the respondents. Specifically, 18 had learnt of FNA through books / journals; 10 from their consultants; 9 from colleagues; and only 4 through seminars/workshops. Surprisingly, the hypothetical risk of haemorrhage and fear of tumour embolization were cited as the major draw back of FNA to explain its underutilization in the practices of half of the respondents. Thirty-five (79.5 %) of the clinicians were interested in additional training in FNA sampling.

Practices

Only 5 / 44 respondents do personally aspirate lumps for FNA cytology (these were exclusively trainees / residents in laboratory medicine). However, analyzing for the frequency of FNA requests sent to pathologists, it was found out that nine doctors had never requested for FNA, 15 had requested for it 3-4 times in the preceding year while for 20 (45.5 %) respondents FNA requests are regular in their practices. The regular users listed the common sites aspirated as breast, thyroid, lymph node and salivary glands, in that order. Nine or 20.5 per cent of the respondents felt histological confirmation was mandatory before definitive treatment. They enumerated the major deficiencies with FNA services in the center to be delay in receiving results (ranging from 2-20days), objections on the part of relations and patients, unhelpful or vague results and occasional inaccuracies. In their view an ideal FNA service should guarantee faster result generation or turnaround times (100.0 %) precision (79.5 %) and lower costs of care (50 %).

Discussion

The general acceptability of FNACs done in our institution is reflected in the number of the investigations done in the years 2002, 2003 and 2004 which were 288, 438 and 322 respectively, the decrease in 2004 probably related to a protracted doctors' strike in the latter part of that year. Similarly, the percentage of excision biopsies carried out without resorting to FNAC for the 1440 superficial lesions biopsied in 2004 was 82.5% which is typical of institutions where there is growing awareness of FNAC.

The proportion of non-responders in this study is high (45%) and this could have influenced our findings. Nonetheless, this study has revealed that

awareness of FNA among junior doctors in Nigeria is very high. Economic realities appear to force physicians in the developing world to support a paradigm shift away from sophisticated, expensive and invasive modes of investigation in favour of cheaper, conventional and minimally invasive methods. Commenting on these issues, Thomas et al⁷ characterized medical centers in Nigeria to be bedeviled by inadequate theater facilities, limited operating time and a heavy patient load all culminating in long waiting lists and recommended that in view of its inherent simplicity and minimal costs FNA should be adopted more widely in Nigeria. Several workers in the country also had highlighted that significant advantages were experienced in those centers where FNA had been used as preliminary or alternative to conventional biopsy.^{4, 5, 8, 9} That the present study was conducted in an elite teaching hospital might also explain the high level of awareness noted among the respondents. Gupta et al¹⁰ were of the opinion that the economic milieu at non academic institutions may actively discourage clinicians practicing at those institutions from fully utilizing FNA. They enumerated the reasons for this uneven distribution between teaching hospitals and non academic centers to include also the availability of trained cytopathologists and the philosophy of medical staff towards the FNA technique. These multi factorial reasons for under utilization, and others, are in keeping with the findings of Bottles et al.¹¹ Our data indicates that in spite of the high level of awareness of FNA among Nigerian doctors; however, ignorance of its simplicity, methodology and safety prevents more widespread use. In other words, the level awareness is not matched by a corresponding high level of utilization either personally or through requests for FNA tests. We were disappointed to note this negative attitude towards FNA among our respondents, and considering that the technique is still relatively new in the country this could discourage its frequent use. Additionally, our data has shown that specialty of respondents does not affect the knowledge, attitude and practice of FNA.

When asked to explain its relative under utilization, the respondents cite paucity of skilled cytotechnologists and pathologists to interpret the samples as major reasons. This suggests that some of them do not believe that their pathologists are well trained or experienced on FNA to give credible result. This may well be the truth as organized training in cytopathology in Nigeria is still at its infancy and the number of pathologists practicing cytology is low.

It does seem that not enough medical trainees and technologists are being trained towards developing and expanding cytology services in Nigeria. To the extent that shortage of training opportunities is an important limiting factor to the widespread adoption of FNA, its acceptance and effectiveness is nonetheless heavily dependent on the skill and expertise of the few persons presently involved in it. To guarantee successful FNA, Nasuti and others recommend for capable operators; able to recover adequate samples and prepare good smears, noting that up to 32 per cent of FNAs may be non diagnostic if this condition is not met.¹²

As a way to raise the rates of FNA requests, the respondents suggest more physicians' training in aspiration techniques though majority of the respondents correctly point out that the pathologist is in the best position to obtain FNA specimens. This opinion is backed by previous studies.^{13, 14} There is frequently a tendency for non trained persons who mistake the simple for the trivial to venture into obtaining FNA samples for cytology with disastrous consequences. The current argument is strongly in favour of the pathologists performing this role but in view of their unavailability in Nigeria we recommend that other clinicians partake in this duty after receiving adequate training. Workers in the United States (Ljung et al¹⁵ and Tabbara¹⁶) had shown that wherever samples are collected and prepared by clinicians without formal training the consequence is a high rate of non diagnostic specimens, delays and missed cancers. Physician training is indeed central to satisfactory FNA services.¹¹ In fact, a sizeable number of the doctors felt they would benefit from specific training in FNA. In a study done at three San Francisco hospitals it was shown that physicians with formal training in FNA sampling technique achieved much more accurate diagnostic results than those without such training.¹⁵ In our opinion this sort of training would guarantee a more robust use of FNA among clinicians in the developing countries.

Half of the doctors were noted to have misconceptions (wrong attitudes) about FNA on the basis of a purported low sensitivity and frequent complications. This opinion had been repudiated by the works of Thomas, Bhusnurmath, Ogunniyi, and others who had shown convincingly, that the sensitivity of FNA in the hands of Nigerian cytopathologists was as high as that reported in the industrialized countries.^{4, 6-9} Additionally, because the rate of FNA use in the country is still low doctors may not be aware

that its complications are minimal or insignificant. Wherever the rate of FNA utilization is low it is not uncommon that clinicians would exhibit important gaps in their knowledge of its safety and utility in several clinical settings.¹⁵ Only isolated cases of confirmed tumour embolization and needle track seeding in routine FNA practice are recorded in the English literature, and these were attributed to the use of large bore needles (20-22G sizes).^{1,17} One persistent cause of limitation in FNA utility in Nigeria is lack of image-guidance. Review of the MEDLINE literature showed that none the indexed articles on FNA in Nigeria from 1985 to 2000 specifically mentioned the use of ultrasound guidance as an adjunct in FNA.^{4,9} This fact is corroborated in this survey which showed that as many as 50 % of the respondents were unaware of the role of ultrasound, Computed tomography or fluoroscopic techniques in routine FNA practice. This highlights the need for more involvement of radiologists in FNA to enhance its value as a first-line investigative procedure in Nigeria. Another worrying finding was that seventy-five percent of the doctors felt that immunocytochemistry and flow cytometry cannot contribute to correct cytological diagnoses. In an earlier report from Ibadan in Nigeria, Thomas et al⁷ had bemoaned the paucity of these ancillary tests. It is note worthy that Saleh and Masood¹⁸ had concluded, after an extensive review of the literature on use of immunocytochemistry and flow cytometry in FNA, that ancillary investigation could greatly enhance the accuracy and scope of FNA cytology.

From the available evidence FNA has a demonstrable cost advantage over open biopsy and benefits patient care and cost-containment efforts; an important consideration in view of the medical and technological limitations in Nigeria.^{7, 10} In the United States, Rimm et al¹⁹ had analyzed the largest series of patients to date (12,452 cases) to determine the savings that result from obtaining a pathologic diagnosis by FNA rather than open surgical biopsy. They found that FNAs consistently provide reliable pathologic diagnoses to obviate open surgical biopsies in up to 63-85 % of the cases.

We conclude that for FNA to effectively complement cancer control activities in Nigeria, the most important immediate challenge is human resource development. In view of its affordability, safety, rapidity and high degree of accuracy, FNA should be more widely adopted in place of less sensitive but more expensive alternatives in day-to-

day clinical practice in the developing countries.

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SCIENTIFIC PROGRAMME 29th November 2007

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Moderator- **Dr. Ravi Mehrotra** (MLNMC, Allahabad)

(II) Work shop on Viral related infections of the Cervix

Moderator- **Dr. Kamal M Meharbano** (GMC, Nagpur)

30th November 2007

CME on Cytology of Kidney and Adrenal lesions (Neoplastic & Non- neoplastic)

Moderator- **Dr. R.G.W. Pinto** (Goa)

**Meeting of the editorial Board of the Journal of Cytology
Executive committee of IAC meeting**

Inauguration of the IAC Conference- 30th November- 2007(Evening)

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