

## Original Research Article

# A 6-year retrospective study of fine needle aspiration cytology pattern of otorhinolaryngological cases of patients referred to national ear care centre Kaduna (2013-2018)

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## ABSTRACT

**Background:** This study was carried out to obtain the retrospective study of FNAC cases referred to NECC; and review occurrences of otorhinolaryngological swellings and demographic studies of patients for a period of 6 years (2013-2018). Records of FNAC were obtained from the laboratory department's unit's register alongside the biodata of patients for demographic studies.

**Methods:** FNAC samples were treated for diagnosis according to the unit's standard operating procedure for cytology. A total of three hundred and fifty-three 353 cases were reported and tables were then plotted to present the study cases using simple descriptive statistics.

**Results:** Highest age distribution was between thirty to thirty-nine (30-39) years with a total of ninety-five cases 95(26.9%) followed by the range of forty to forty-nine (40-49) years with a value of eighty 80(22.6%). Females had the highest frequency of one hundred and thirty-three 133 (62.3%) compared to their male patient counterpart with a value of two hundred and twenty 220 (37.6%). The site of sample collection had ANS with the highest value of eighty-one 81 (42.4%) compared to other sites. The year 2016 had the highest number of FNAC cases and finally ninety 6 cases 96 (27.2%) of cases were inflammatory, two hundred and thirty-two 232 (65.7%) were benign while twenty five 25 (7.1%) were malignant.

**Conclusions:** In conclusion; FNAC plays a vital role in managing otorhinolaryngology conditions and gives a way forward for effective treatment to patients and often at times is therapeutic as some patients come with fluid field swelling that get relieved after the procedure.

**Keywords:** Anterior neck swelling, Anterior neck mass, Fine needle aspiration, Fine needle aspiration cytology

## INTRODUCTION

Fine-needle aspiration (FNA), or fine-needle aspiration cytology (FNAC), is a diagnostic procedure used to investigate lumps or masses. In this technique, a thin (23-

25 gauge), hollow needle is inserted into the mass for sampling of cells that, after being stained, will be examined under a microscope. There could be cytology exam of aspirate (cell specimen evaluation, FNAC) or histological (biopsy-tissue specimen evaluation but only

if it is done as a biopsy rather than aspiration.<sup>1</sup> Fine-needle aspiration biopsies are very safe, minor surgical procedures. Often, a major surgical (excisional or open) biopsy can be avoided by performing a needle aspiration biopsy instead. In 1981, the first fine-needle aspiration biopsy in the United States was done at Maimonides Medical Center, eliminating the need for surgery and hospitalization.<sup>2</sup> Today, this procedure is widely used in the diagnosis of cancer and inflammatory conditions.<sup>2</sup> A needle aspiration biopsy is safer and less traumatic than an open surgical biopsy, and significant complications are usually rare, depending on the body site. Common complications include bruising and soreness. There is a risk, because the biopsy is very small (only a few cells), that the problematic cells will be missed, resulting in a false negative result. There is also a risk that the cells taken will not be adequate for definitive diagnosis.<sup>2</sup> The aim of this research is to study the FNAC pattern of otorhinolaryngological cases of patients referred to NECC Kaduna retrospectively over a 6-year period (2013-2018).

#### ***FNAC in ear nose and throat cases (ENT)***

FNAC has also found great use in otorhinolaryngology; Fine needle aspiration cytology (FNAC) is one of the single most important investigations in ENT. FNAC helps to diagnose lesions in the oral cavity, floor of mouth, tongue, palate, tonsils and posterior pharyngeal wall, anterior neck swelling, pre and post auricular lesions, lymphadenopathy and other swellings around the neck. Cytology studies are also done on nasal smears to detect inflammations and allergic rhinitis without the use of aspiration techniques.<sup>1</sup>

#### ***Most common indications for fine needle aspiration cytology in ENT are:***

##### ***Salivary gland swelling***

FNAC of the salivary glands is helpful because it often differentiates benign from malignant swellings. It thus changes the management. Common salivary gland swellings are: pleomorphic adenoma, Acinic cell carcinoma and adenoid cystic carcinoma. Findings on a normal FNAC of the salivary gland would show acinar cells and ductal epithelial cells.<sup>3</sup> Common lymph node conditions include tuberculous lymphadenitis, chronic inflammatory lymphadenitis, secondary metastases of lymph nodes, malignant lymphoma such as Burkitt's lymphoma and Hodgkin's lymphoma.<sup>4,5</sup>

##### ***Parotid swelling***

This could be caused by tuberculosis which is a necrotizing granulomatous disease with varied clinical presentation and a wide distribution. Although the disease usually affects the lungs, extra pulmonary forms are not uncommon and account for approximately 20% of overall active tuberculosis.<sup>6</sup> Another cause of swelling is the

Actinomycosis of the Parotid; primary actinomycosis is a granulomatous lesion characterized by chronic suppuration usually caused by *Actinomyces israelii*, gram-positive, anaerobic, commensal bacteria within the oral cavity. Actinomycosis usually occurs in healthy people, when local conditions favour its growth. It commonly affects the facial soft tissue, salivary glands, bone and skin of the face and neck. Primary actinomycosis of the parotid gland is very rare and can mimic a neoplasm.<sup>7</sup> Other conditions causing unilateral enlargement of the parotid region can also be associated with a palpable mass or a diffuse swelling example of which include pleomorphic adenoma and other malignant conditions.<sup>8</sup>

#### ***Nasal cytology (nasal smear) test for allergic rhinitis***

People who have allergies, such as allergic rhinitis, sometimes have more eosinophils in their blood and other body fluids than do people who don't have allergies. Nasal cytology, or a nasal smear test, checks for these cells. Doctors can use the test to confirm a diagnosis of allergic rhinitis that is very simple.<sup>9</sup> You blow your nose on a piece of plastic wrap. A lab technician examines the nasal discharge under a microscope. If there are many eosinophils, you may have allergies. Finding few eosinophils (negative result), though, does not mean that allergies are not causing your symptoms.<sup>10,11</sup>

#### ***Thyroid swellings***

FNAC of thyroid has been established as an important diagnostic test for evaluation of benign and malignant thyroid swellings.<sup>12</sup> Major indications include Diagnosis of diffuse non-toxic goitres, confirmation of clinically obvious thyroid malignancy, diagnosis of solitary thyroid nodule, acute suppurative thyroiditis, follicular neoplasm, papillary carcinoma of thyroid, medullary carcinoma, cyst/haemorrhage in thyroid gland and medullary carcinoma.<sup>13,14</sup>

#### ***Lymphadenopathy***

Lymphadenopathy or adenopathy is disease of the lymph nodes, in which they are abnormal in size, number, or consistency.<sup>5</sup> Lymphadenopathy of an inflammatory type (the most common type) is lymphadenitis, producing swollen or enlarged lymph nodes.<sup>6</sup> In clinical practice, the distinction between lymphadenopathy and lymphadenitis is rarely made and the words are usually treated as synonymous. Inflammation of the lymphatic vessels is known as lymphangitis.<sup>7</sup> Infectious lymphadenitides affecting lymph nodes in the neck are often called scrofula. The term comes from the word lymph and a combination of the Greek words ἀδένας, *adenas* ("gland") and παθεῖα, *patheia* ("act of suffering" or "disease"). Lymphadenopathy is a common and nonspecific sign. Common causes include infections (from minor ones such as the common cold to dangerous ones such as HIV/AIDS), autoimmune diseases, and

cancers. Lymphadenopathy is also frequently idiopathic and self-limiting. Objectives of the study were to determine the demographic study of patients presented with FNAC cases, to know the percentage of each type of case, to present some of the photomicrographs of FNAC cases and to categorise the numbers of FNAC obtained into malignant, benign and inflammatory conditions.

**METHODS**

Design of study was a cross sectional type taking into account all cytology patients diagnosed in the department. Records of FNAC was reviewed from patients referred to the Medical Laboratory Service Department of National Ear Care Centre Kaduna and a 6-year retrospective study conducted from 2013-2018. This is a retrospective study as such number of participants were stated in the results section after counting from the Unit’s register with a total of 353patients.

All clinically diagnosed patients of otorhinolaryngologic swellings which included both deep sited and peripheral lesions served as the study participants. Demographic studies of referred patients were obtained from the cytopathology unit registration records. Inclusion criteria included all patients referred to the histopathology unit of the department for fine needle aspiration cytology regardless of age, gender and location where as exclusion criteria involved patients without visible and/or palpable swellings for cytology.

*Statistical analysis*

Simple descriptive statistics was used in the processing of data to generate information on research findings.

*Definitive diagnoses of FNAC swellings and procedure used*

The diagnoses of the lesions were retrieved from the unit’s register and procedure of all reports followed the protocol stated below:

Swelling was wiped with spirit swab. Then, 20ml syringe was fixed to an aspiration gun and negative pressure created. In the case of deep sited lesions, ultrasound guided FNAB was employed taking patients to the Radiology Department for collaboration with Consultant Radiologists to help scan and guide the pathologists in the correct angle and position to insert the needle for good sample collection. Needle was carefully inserted to the swellings and cells dislodged and aspirated. Smears were made on labelled microscope glass slides and fixed in 95% ethanol for 30minutes. They were then flooded with Giemsa stain working solution on a rack for 30minutes and washed with running tap water. For smears that were processed with the DQ technique: Smears were air dried and fixed in methanol for 15minutes, they were then stained in both stains A and B for 5minutes each and rinsed with water. They were then

dried and mounted using xylene and DPX. Finally, they were viewed by the consultant pathologist and diagnosis established. Nasal smears were obtained by making the referred patients to blow first their right nostril on 2 well labelled slides as well as the left nostrils. The smeared slides then follow the same protocol as with all cytology slides in the unit.

**RESULTS**

Table 1 starts with age wise distribution of cases; there are forty three 43 (12.1%) of patients presented with FNAC cases in the age range of 0-9years, twenty three 23 (6.5%) of patients in the range 10-19years, thirty nine 39 (11.0%) of FNAC cases in the age range 20-29years, ninety five 95 (26.9%) were reported in the range 30-39years, eighty 80 (22.6%) were recorded in the year 40-49years, forty six 46 (13.0%) were reported in the age range 50-59years and finally twenty seven 27 (76%) were done in the range above 60years.

**Table 1: Age wise distribution of cases.**

Age	Number	Percentage (%)
0-9yrs	43	12.1
10-19yrs	23	6.5
20-29yrs	39	11.0
30-39yrs	95	26.9
40-49yrs	80	22.6
50-59yrs	46	13.0

**Table 2: Sex distribution.**

Sex	Number	Percentage (%)
Male	220	62.3
Female	133	37.6

Table 2 showed that in terms of gender distribution; there two hundred and twenty 220 (62.3%) females presented with conditions requiring FNAC compared to 133 (37.6%) obtained in their male counterpart.

**Table 3: Showing site of sample collection.**

Site	Frequency	Percentage (%)
Anterior neck swelling	150	42.4
Auricular	81	22.9
Laryngeal mass	43	12.1
Nasal smear	38	10.8
Others	41	11.6

Table 3 shows results at sites of samples aspirated; one hundred and fifty 150 (42.4%) were obtained from the anterior neck swellings, eighty-one 81 (22.9%) from the auricular region, forty-three 43 (12.1%) from the laryngeal masses, thirty-eight 38 (10.8%) of nasal smeared were collected; finally other regions around the ENT surmount to forty-six 46 (11.6%) of the total cases.

**Table 4: Number of each diagnosed FNAC case.**

Diagnoses	Frequency	Percentage (%)
Pleomorphic adenoma	37	10.4
Fibroadenoma	1	0.2
Hodgkin's lymphoma	1	0.2
Tuberculosis	1	0.2
Thyroglossal cyst	5	1.4
Inflammatory smears	83	23.5
Ameloblastoma	2	0.5
Benign Goitre	134	37.9
Lipoma	21	5.9
Chronic granulomatous inflammation	8	2.2
Hyperplasia	8	2.2
Allergic rhinitis	2	0.5
Benign swellings	23	6.5
Suspicious for malignancy	5	1.4
Malignant	15	4.2
Metastatic carcinom	2	0.5
Metastatic lymphoma	2	0.5

**Table 5: Yearly distribution of cases.**

Year	Frequency	Percentage (%)
2013	28	7.9
2014	48	13.6
2015	48	13.6
2016	88	24.9
2017	71	20.1
2018	70	19.8

Table 4 extrapolates results obtained about the diagnosed cases include thirty seven 37 (10.4%) for pleomorphic adenoma; 1 (0.2%) cases each of fibroadenoma, Hodgkin's lymphoma and tuberculosis, five 5 (1.4%) diagnosed with thyroglossal cyst, eighty three 83 (23.5%) cases for inflammatory smears, two 2 (0.5%) diagnosed cases each of allergic rhinitis, ameloblastomas, metastatic lymphoma and carcinoma, eight 8(2.2%) cases each of chronic granulomatous inflammation and hyperplasia, one hundred and thirty four 134 (37.9%) diagnosed cases of benign goitre and the last but not the least is twenty one 21 (5.9%) of lipoma, twenty three 23 (6.5%) of benign swellings, five 5 (1.4%) cases of suspicious for malignancy and fifteen 15 (4.2%) diagnosed cases of malignancy.

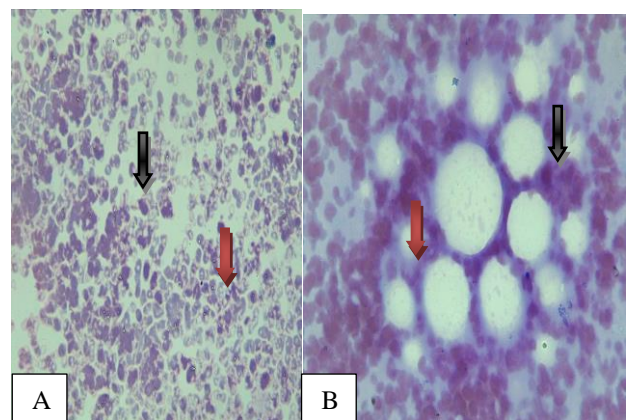
Table 5 stipulates results distribution from the year 2013-2018; twenty-eight 28 (7.9%) of the cases have been diagnosed in the year 2013, forty-eight 48 (13.6%) in the year 2014 and 2015, eighty-eight 88 (24.9%) in the year

2016, seventy-one 71 (20.1%) and finally seventy 70 (19.8%) in the year 2018.

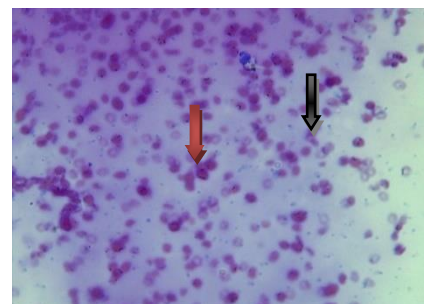
**Table 6: Number of malignant and non-malignant cases obtained.**

Cases	Number of cases	Percentage (%)
Inflammatory	96	27.2
Benign	232	65.7
Malignant	25	7.1

Table 6 summarizes the distribution into inflammations, benign and cancerous lesions; there are ninety six 96 (27.2%) cases of inflammatory, two hundred and thirty two 232 (65.7%) cases of benign and twenty five 25 (7.1%) cases of malignancy.



**Figure 1: Left parotid mass and upper neck mass. A) Red arrow- disadhesive round to oval cells. Black arrow showing regular nuclear borders, evenly distributed chromatin and moderate amount of cytoplasm. B) Black arrow - showing few irregular nuclear borders, coarsely and uneven distributed chromatin and occasional nucleoli. Red arrow - round to oval cells.**



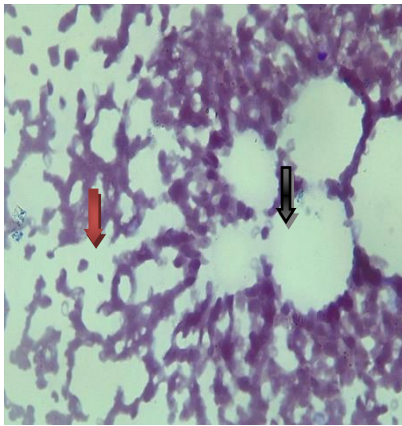
**Figure 2: Anterior neck swelling. Black arrow - pointing to intraepithelial follicular cell with evenly distributed chromatin and moderate amount of cytoplasm. Red arrow - these are displayed against a proteinaceous background.**

The following plates indicate photomicrographs of slides prepared in the histopathology unit of the department of

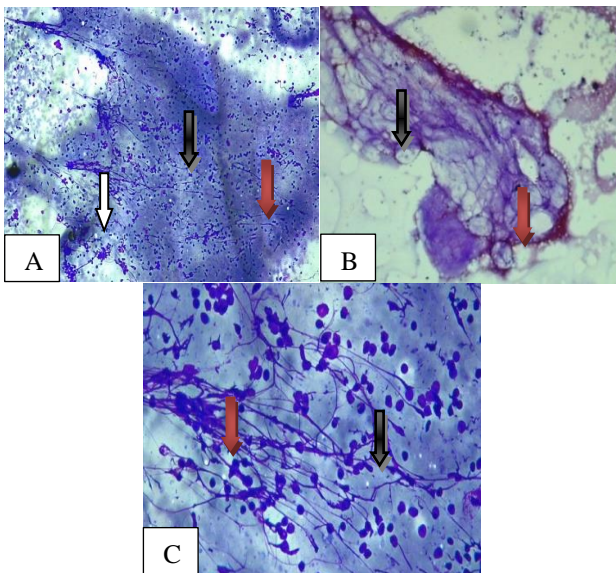
some lesions aspirated from referred patients in the centre. Benign pleomorphic adenoma: Sparsely cellular smear composed of haemorrhagic background.

Suspicious for malignancy was smear from swelling are similar and show clusters of cells with a background showing intense neutrophilic infiltrates.

Benign goitre smear demonstrated clusters and singles of fairly uniform round cells.



**Figure 3: Lower neck swelling and neck swelling. Black arrow - pointing to a few irregular nuclear borders, coarsely distributed chromatin and occasional nucleoli. Red arrow: showing a background with intense neutrophilic infiltrates.**



**Figure 4: Multiple back swelling, upper jaw, neck swelling and submandibular swelling. Black arrow: showing eccentrically placed regular nuclei and abundant cytoplasm. These are displayed against a mucoïd background. Red arrow indicates red cells while black arrow indicates haemorrhage at magnification X40.**

Suspicious for malignancy smear from swelling were similar and showed clusters of round to oval cells indicated by the following arrows at magnification X400.

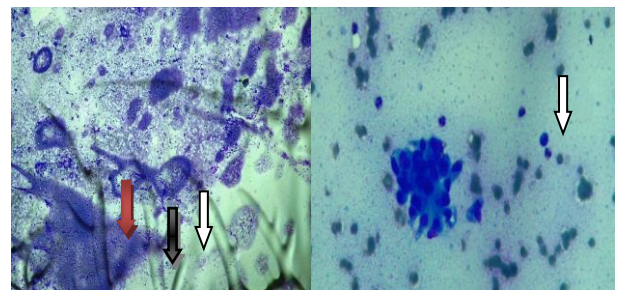
Lipoma: Smears from the upper jaw swelling show numerous clusters of fairly uniform round cells having indicated by magnification X100.

Benign: Smear demonstrates extensive area of colloid material with haemorrhage.

**Submandibular swelling**

Benign: Smears demonstrate few granuloma made up of epitheloid histiocytes, lymphoplasma cells and caseous necrotic background. Features are those of chronic granulomatous inflammation, tuberculosis cannot be ruled out. The red arrow points at the lymphoplasma cells, the black arrow points at the epitheloid histiocytes while the white arrow for the background indicates caseous necrosis.

Granuloma: Smear demonstrates several granulomas made up of epitheloid histiocytes, lymphoplasma cells, with caseous to haemorrhagic background. Features are suggestive of chronic granulomatous inflammation. Tuberculosis cannot be ruled out. . The red arrow points at the lymphoplasma cells, the black arrow points at the epitheloid histiocytes while the white arrow for the background indicates caseous necrosis at magnification X40.

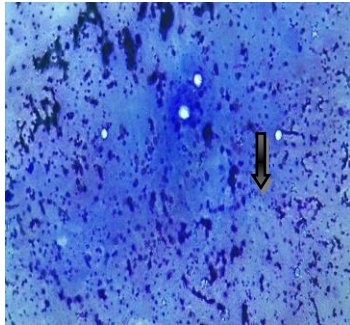


**Figure 5: Bilateral neck swelling and anterior neck swelling.**

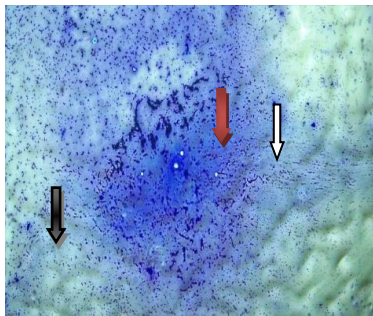
Benign: Smear demonstrates extensive areas of colloid background. Arrow indicates colloid material at magnification X100.

Benign: Smear demonstrates extensive area of caseous necrosis with few histiocytes. Features are those of chronic granulocyte inflammation, tuberculosis cannot be ruled out. The black arrow points to a histiocyte. Chronic granulomatous inflammation seen in smears demonstrated superficial squamous cells, the background demonstrate lymphoplasma cells with neutrophils. The black arrow shows a squamous cell, the red arrow points to a lymphoplasma cell while the white arrow shows a neutrophil (magnification X100).

Allergic rhinitis: Smear demonstrates squamous cells, the background demonstrates lymphoplasmic cells admixed with few eosinophils. The black arrow shows a squamous cell while the red arrow shows the background with lymphoplasmic cells (magnification X40).



**Figure 6: Right submandibular swelling and nasal smear.**



**Figure 7: Submental swelling and nasal smear.**

## DISCUSSION

The use of fine needle aspiration cytology (FNAC) is a valuable technique in the work up of nodules and masses within the head and neck region. Although masses and nodules of ear, nose and throat (ENT) can present most often as benign and malignant lesion, others are inflammatory and infectious diseases. Majority of the malignant lesion are squamous cell carcinoma obtained after a FNAC procedure.<sup>15</sup>

The primary site the tumours in this research were anterior neck mass (ANM) and auricular mass with one hundred and fifty 150 (41.9%) and eighty-one 81(22.9%) respectively. Contrary to the finding that most primary sites are nasopharyngeal and thyroid by James et al who collectively state that extrapulmonary form of *Mycobacterium tuberculosis* infection causes a cervical lymphadenopathy. The diffuse bilateral lymph nodes are characteristically multiple, fixed, firm, nontender masses located in the posterior triangle/circular chain. Suspicion should be high in those who have recently immigrated from or travelled to tuberculosis-endemic areas such as India, South Asia or Sub-Saharan Africa.<sup>16</sup> However, most of the ANM in this study were thyroid tissue aspirate, probably because most subjects were females.

The age distribution of otolaryngological cases suggests that most ages between thirty to thirty-nine (30-39) years represent ninety-five (26.9%) in this study followed by age fifty to fifty-nine (50-59) and zero to nine (0-9) years with forty-six (13.0%) and forty-three 43 (12.1%) respectively. This age frequency in this study showed a bimodal which is contrary to that of Halmos et al. in the year 2018 who reported increase age related risk to the ENT cancer on the other hand Larizadeh et al.<sup>18,19</sup> reported the mean age of fifty-three point zero three (53.03) years the mid age thirty to thirty-nine (30-39) presentation of this study may not be unconnected to social activity such as alcoholism and smoking which increased risk of ENT cancer and general lower life expectancy.<sup>14</sup>

The sex distribution showed most subjects are females representing two hundred and twenty (62.3%) contraries to the finding that males presented with most cancers by Larizadeh et al the resulting high frequency of female tumours may not be unconnected with the fact that most frequent tumour in this study is from ANM (thyroid) mostly in female.<sup>18</sup>

Most of the tumours are benign with goitre representing the highest, followed by pleomorphic adenoma. This may be due to the fact that most of site increase neck and thyroid mass are the most frequent alongside the high frequency of female study found in this study.

The years with the most cases were 2016 with nine cases of cancer of which are metastatic from an unknown origin. 2017 and 2018 has seventy-one (71) and seventy (70) cases per annum. Results obtained about the diagnosed cases include thirty-seven 37 (10.4%) for pleomorphic adenoma; in a similar study conducted by Odukoya in 1990; 45 cases of pleomorphic adenoma of minor and major salivary glands were undertaken. The tumor presented in the age range from 11-75years (mean age was 31 years) and was slightly more prevalent in males than females in a ratio of 8:7 in Lagos.<sup>20</sup> 1(0.2%) cases each of fibroadenoma, Hodgkin's lymphoma and tuberculosis, similar to a study conducted by Raphael and others in the year 2017; 504 cases of fibroadenoma was diagnosed among the Igbo ethnic groups with average age of patients around 22.6 +or - 6-7years; 1 (0.2%) of the cases were giant, complex fibroadenoma. Talking about lymphomas; a study conducted by Mava and his team of researchers presented 10 (20%) of lymphomas belonging to Hodgkin's lymphoma and 40 (80%) to non-Hodgkin's lymphoma in North Eastern Nigeria, in the year 2015.<sup>22</sup> As for tuberculosis cases; Nigeria comes 3<sup>rd</sup> after only India and China; Kenneathe in their findings in Enugu figured that about 176 (22%) of 868 subjects that participated had the disease in 2018.<sup>23</sup> five 5 (1.4%) diagnosed with thyroglossal cyst, consequently; 2 case reports of thyroglossal duct cyst (TGDC) were seen in a 42-year-old man, presented with a painless anterior neck swelling of more than 3 months duration and that of a 20-year-old female student presented with a midline neck

swelling of 5-year duration done by Daniel and his associates in 2016.<sup>24</sup> Eighty-three 83 (23.5%) cases for inflammatory smears, in a similar vein; research done by Ochicha and others at AKTH in the year 2012 showed that 13 (50.6%) of the study subjects had inflammatory smears as evidenced by prominent neutrophilic infiltrates of the cervix. 30% of which had microbial growth on culture and positive Chlamydia antigen test.<sup>25</sup> Two 2(0.5%) diagnosed cases each of allergic rhinitis, ameloblastomas, metastatic lymphoma and carcinoma, consequently allergic rhinitis was prevalent at a rate of 22.8% of 20063 participants from 6024 households when screened. Prevalence of asthma and rhinitis increased with age and varied across different cities with the highest in Lagos at 2017 through 2018.<sup>28</sup> Ameloblastoma findings done by Godwin and associates in the year 2005 indicated 360 patients diagnosed with the condition. 57.3% of the samples were obtained from the symphyseal region of the mandible.<sup>19</sup> Eight 8 (2.2%) cases each of chronic granulomatous inflammation and hyperplasia, in a different study; 13 paediatric patients were diagnosed with chronic granulomatous disease and were all males. The disease was caused by *Staph. aureus*, *Serratia liquefaciens* and *Salmonella typhimurium* among others indicated by positive cultures.<sup>28</sup> The Study took place in the year 1980 through 2005 by one hundred and thirty-four 134 (37.9%) diagnosed cases of benign goitre; Edino et al in the year 2010 discovered that 160 multinodular goiters had 15% histologically diagnosed with cancer; 1 patient had carcinoma with solitary thyroid nodule and similar to the findings in this article, the age distribution was 16-65 years for the study subjects and 72% were females.<sup>26</sup> Twenty-one 21 (5.9%) of lipoma, again; Adeyi and associates presented a case report of a 35 year old woman of Tiv ethnic group of Nigeria diagnosed with a slow growing left cheek swelling treated by intra-oral local excision in Jos 2008.<sup>27</sup> twenty-three 23 (6.5%) of benign swellings, this is in line with the findings of Cappacio and associates in the year 2007 whose findings revealed that metastatic carcinoma, lymphoma and salivary gland carcinoma are the most frequent lesions.<sup>16</sup> The same has been reported in the Merck medical manual.<sup>17</sup> The high frequency of tumours maybe due to early visit to the hospital or increase awareness to growth and tumours. and the last but not the least is five 5 (1.4%) cases of suspicious for malignancy and fifteen 15 (4.2%) diagnosed cases of malignancy. A finding done by Bakari et al in 2017 revealed malignant lymphoma and immunohistochemistry positive results of some certain markers like Epstein barr virus encoded RNA (EBER) but negative for some like CD20. Unfortunately; patient was lost to follow up.<sup>28</sup>

This study has some limitations. In FNAC; there are a lot of unrepresentative specimens obtained from aspirates leading to inadequate smear and un-definitive diagnosis, the second pitfall is in the suspect category where positive diagnosis is seen in histology alone. Typing of tissues in FNAC is also very difficult and lastly cellular samples give limited information about the tumour but

with all the limitations, FNAC remains very useful in many ways and should be continued in hospital facilities.

## CONCLUSION

In conclusion FNA is fast, suitable, cheap and accessible technique in diagnoses, benign lesions are the most occurring tumours diagnosed, followed by inflammatory and then malignant. This indicates that FNAC can be used to quickly give a direction on the next line of action to take in terms of treatment and surgery in clinical practices.

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## REFERENCES

1. Al-Abadi MA. Basics of cytology. *Avicenna J Med.* 2011 Jul;1(01):18-28.
2. Trop I, Dugas A, David J, El Khoury M, Boileau JF, Larouche N, Lalonde L. Breast abscesses: evidence-based algorithms for diagnosis, management, and follow-up. *Radiographics.* 2011;31(6):1683-99.
3. Grases F, Santiago C, Simonet BM, Costa-Bauzá A. Sialolithiasis: mechanism of calculi formation and etiologic factors. *Clinical Chim Acta.* 2003;334(1-2):131-6.
4. Lustmann J, Regev E, Melamed Y. Sialolithiasis. A survey on 245 patients and a review of the literature. *Inter J Oral Maxillo Surg.* 1990;19(3):135-8.
5. Capaccio P, Torretta S, Ottavian F, Sambataro G, Pignataro L. Modern management of obstructive salivary diseases. *Acta Otorhinolaryngol Ital.* 2007;27(4):161-72.
6. Ermis I, Topalan M, Aydin A, Erer M. Actinomycosis of the frontal and parotid regions. *Ann Plastic Surg.* 2001;46(1):55-8.
7. Lee IK, Liu JW. Tuberculous parotitis: case report and literature review. *Ann Otol Rhinolaryngol.* 2005;114(7):547-51.
8. Sethi A, Sareen D, Sabherwal A, Malhotra V. Primary parotid tuberculosis: varied clinical presentations. *J Oral Dis.* 2006;12(2):213-5.
9. Crobach M, Hermans J, Kaptein A, Ridderikhoff J, Mulder J. Nasal smear eosinophilia for the diagnosis of allergic rhinitis and eosinophilic non-allergic rhinitis. *Scandinavian J Primary Health Care.* 1996;14(2):116-21.

10. Bancroft LW, Kransdorf MJ, Peterson JJ, O'Connor MI. "Benign fatty tumors: classification, clinical course, imaging appearance, and treatment". *J Skeletal Radiol.* 2006;35(10):719-33.
11. Trayhurn P. Hypoxia and adipocyte physiology: implications for adipose tissue dysfunction in obesity. *Annual Review of Nutrition.* 2014;34:207-36.
12. Rhee CM, Ravel VA, Streja E, Mehrotra R, Kim S, Wang J, et al. Thyroid functional disease and mortality in a national peritoneal dialysis cohort. *The Journal of Clinical Endocrinology Metabolism.* 2016;101(11):4054-61.
13. Fasunla AJ, Samdi M, Nwaorgu OG. An audit of Ear, Nose and Throat diseases in a tertiary health institution in South-western Nigeria. *Pan African Med J.* 2013;14(1).
14. Al-Abadi MA, Shareef SQ, Ali JA, Yousef MM. Application of the Bethesda System for Reporting Thyroid Cytopathology in the Eastern Province of Saudi Arabia: phase I pilot retrospective analysis. *Acta Cytologica.* 2013;57(5):481-8.
15. James H, Kelly R, Arnold MD, Christina A, Sathish C. Evaluation of Neck Masses in Adults. *American Family Physician.* 2015;91(10):698-706.
16. Schadendorf D, Lebbé C, Zur Hausen A, Avril MF, Hariharan S, Bharmal M, et al. Merkel cell carcinoma: epidemiology, prognosis, therapy and unmet medical needs. *Euro J Canc.* 2017;71:53-69.
17. Larrizadeh MH, Damghaim A, Shabani M. Epidemiological Characteristics of Head and Neck Cancer in South-eastern Iran. *Iranian J Cancer Prevent Cancer Prevent Spring.* 2013;7(2):80-6.
18. Arotiba GT, Ladeinde AL, Arotiba JT, Ajike SO, Ugboko VI, Ajayi OF. Ameloblastoma in Nigerian children and adolescents: a review of 79 cases. *J Oral Maxillofacial Surg.* 2005;63(6):747-51.
19. Odukoya O. Pleomorphic adenoma of the salivary glands in Lagos, Nigeria: clinicopathological analysis of 45 cases. *Central African J Med.* 1990;36(10):251-6.
20. Yakubu M, Ahmadu BU, Yerima TS, Simon P, Hezekiah IA, Pwvimbo AJ. Prevalence and clinical manifestation of lymphomas in North Eastern Nigeria. *Indian J Cancer.* 2015;52(4):551.
21. Kenneathe OU, Martin CA, Ifeoma ME. Prevalence of Tuberculosis, DR Tuberculosis and HIV/TB co-infection in Enugu, Nigeria. *African J Infect Dis.* 2021;15(2):24-30.
22. Daniel A, Baba SA, Mohammed A, Caleb M, Joseph S and Kabiru A. A report of 2 cases of Thyroglossal duct cyst in Adults; Nigeria. *Orient J Med.* 2016;28(1-2).
23. Ochicha O, Aminu ZM, Zakari M, Sani AM, Hamisu T. Inflammatory cervical smears and infection in Kano, Northern Nigeria. *J Basic Clin Sci.* 2012;9:2-5.
24. Edino ST, Mohammed AZ, Ochicha O, Malami SA and Yakubu AA. Thyroid Cancers in Nodular Goitres in Kano Nigeria. *Nig J Clin Pract.* 2010;13(3):298-300.
25. Adeyi AA, Tinga LN, Agabus NM and Godwin OE. Buccal Soft tissue Lipoma in an adult Nigerian: a case report and Literature Review. *J Med Case Report.* 2008;13(2):382.
26. Soler-Palacin P, Margereto C, Leubet P, Asensio OI, Espanol T. Chronic Granulomatous Disease in Paediatric Patients: 25 years of Experience. *J Aller Immunopathol (Madr).* 2007;35(3):83-9.
27. Bakari A, Iliyasu Y, Kirfi AM. Extranodal NK/T-cell lymphoma in an African. *Highland Med Res J.* 2017;17(1).
28. Ozoh OB, Aderibigbe SA, Ayuk AC, Desalu OO, Oridota OE, Olufemi O, et al. The prevalence of asthma and allergic rhinitis in Nigeria: a nationwide survey among children, adolescents and adults. *PLoS One.* 2019;14(9):e0222281.
29. Aminu B, Yawale I, Musa KA. Extranodal NK/T-Cell lymphoma in an African. *Highland Med Res J.* 2017;17(1):68-71.

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