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SPECTRUM OF CYTOLOGICAL FINDINGS IN PATIENTS WITH SUPERFICIAL LYMPHADENOPATHY: AN EXPERIENTIAL STATUS IN A NIGERIAN TEACHING HOSPITAL

G.D. FORAE AND [1]C.C NWAFOR

Abstract
Superficial lymphadenopathy ranked among the most common clinical findings encountered in medical practice. Fine needle aspiration cytology (FNAC) is a veritable tool for the assessment and diagnosis of superficial lymph node enlargement.
In this 7 years study a total of 146 patients with superficial lymphadenopathy were referred from the out patients clinics of the University of Benin Teaching Hospital, (UBTH) and other hospitals within the Benin-City metropolis and its environs. FNAC was performed using variable sizes of needle ranging from 21 to 25-gauge attached to 10 or 20mls syringe with a franzen handle. In each procedure, an average of 2 to 3 passes is usually performed and aspirated materials smeared into 4 slides. Slides were stained with Papanicolaou stain, May Grunward Giemsa (MGG) stain and Diff Quick stain.
Of the 146 FNAC performed, 51 cases (34.9%) occurred in the paediatric and adolescent age groups. Twenty seven cases (18.5%) found in patients of the middle age group (40-59) years. Nine patients (6.2%) occurred between 60-79 years. The peak age incidence of the patients was in the 2nd decade of life constituting (n = 32; 21.9%). The most common anatomic site of lymphadenopathy was the cervical group of lymph nodes accounting for (n = 56; 32.9%). Nonspecific lymphadenitis was the most common lesion constituting (n = 53; 36.3%). Reactive hyperplasia was (n = 28; 19.2%) while granulomatous inflammation was (n = 22; 15.1%). Metastatic carcinoma and lymphoma constituted (n = 15; 10.3%) and (n = 16; 11%) respectively.
Fine needle aspiration cytology is a veritable tool in the diagnosis of superficial lymphadenopathy. This can be recommended as the first line of investigation in the diagnosis of lymph node enlargement for patients who may not be able to afford the cost of surgery and biopsy in our locality

Introduction

Typically in humans, lymphadenopathy is superficially or deeply located. Superficial lymphadenopathy ranked among the most common clinical findings encountered in medical practice. The aetiology of lymph nodes enlargement range from spectrum of infections, reactive hyperplasia to malignant diseases.[1] Diagnosing these lesions poses a major challenge to the clinicians. However fine needle aspiration cytology (FNAC) has become a veritable tool for assessment and diagnosis of superficial lymph node enlargement.[2] FNAC can be performed in an outpatient setting. It is a procedure for aspiration of cellular materials for cytological examination. Some of the outstanding benefits when compared to surgical biopsy include easy affordability, simple

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G.D. FORAE
[1]C.C NWAFOR

Department of Pathology
University of Benin Teaching Hospital, Benin-City
Benin city, Nigeria.

[1]Department of Pathology
Federal Medical Centre, Umuahia, Nigeria

Correspondence to:

Dr Gerald Dafe Forae
Department of Pathology
University of Benin Teaching Hospital,
P.M.B. 1111, Benin-City, Nigeria.
E-mail: jforae2000@yahoo.com Phone: 08033760610

procedural maneuvers and minimal invasion without anaesthetic protocols. Again it is cosmetically acceptable with no scars formed at site of FNAC.[3]

In most cases lymph nodes aspirates may be cellular nevertheless few cases may be acellular. Cellular aspirate interpretation may range from a clear cut diagnosis to request for histology.[4] Most of the acellular cases are reported as unsatisfactory. However biopsy of superficial lymph node enlargement is the gold standard for definitive diagnosis. Studies have shown that the diagnostic lymph node enlargement sensitivity and specificity of FNAC is 90% and 95% respectively.[5] Reports have it that majority of superficial lymph node enlargement represent inflammatory and reactive hyperplastic process.[6] Among the inflammatory lesions tuberculosis (TB) is one of the most common infective causes of superficial lymphadenopathy in developing counties including Nigeria.[4,6]

This study attempts to analyze epidemiological and cytological patterns of enlarged superficial lymphadenopathy and the diagnostic value of fine needle aspiration cytology in our locality.

Materials and Method

Study setting and Design: This study of 146 patients with superficial lymphadenopathy were referred from the out patients clinics of the University of Benin Teaching Hospital, (UBTH) and other hospitals within the Benin-City metropolis and its environs. The seven years period of study spanned from January 2004 to December 2011.

FNAC sampling and Laboratory procedure: A brief clinical history, examination of superficial lymph nodes and informed consent is relevant for diagnosis. FNAC was performed using variable sizes of needles ranging from 21 to 25-gauge needle attached to 10 or 20 mls syringe with a franzen handle. An average of 2 to 3 passes is usually performed and aspirated materials smeared into 4 slides. Two of the slides were fixed in 95% alcohol and the remaining 2 air-dried. Slides were stained with Papanicolaou stain and May Grunward Giemsa (MGG) stain and Diff Quick stain. Where necessary, slides were made available for special stains including Ziehl Neelsen (ZN) stain for acid fast bacilli. All the stained slides were evaluated and correlated with their corresponding request cards. Information derived from the request cards includes age, sex, clinical history, clinical diagnosis and anatomical sites of lymph node enlargement. Cytological diagnosis was made by Consultants and Consultants peer group review based on cyto-pathological details of slides.

Data management: Data obtained were analyzed using the SPSS version 17 statistical package.

Results

Demographic Analysis

A total of 146 fine needle aspiration cytology's were performed during this 7 years period. Of these, 51 cases were in the paediatric and adolescent age groups, this accounted for vast majority (34.9%) of cases. Twenty seven cases accounting for 18.5% occurred in patients between the middle age brackets of 40-59 years. Nine patients constituting 6.2% were in the age brackets of 60-79 years. Only 2 (1.4%) cases were 80 years and above. The peak age incidence of the patients was in the 2nd decade constituting (n = 32; 21.9%). The age range was 3 to 82 years while the mean age was 36.3years ± 4.2SD. Male and female

Table 1: Age Distribution of Patients with Superficial Lymphadenopathy

Age	Frequency (%)
0-9	19 (13%)
10-19	32 (21.9%)
20-29	24 (16.4%)
30-39	27 (18.5%)
40-49	15 (10.3%)
50-59	12 (8.2%)
60-69	9 (6.2%)
70-79	6 (4.1%)
80-89	2 (1.4%)
Total	**146 (100%)**

Table 2: Cytological Patterns and Sex Distribution of Superficial Lymphadenopathy of FNAC

Cytological Diagnosis	Male	Female	Total (Percentage)
Granulomatous Lymphadenitis	10	12	22 (15.1%)
Reactive Hyperplasia	17	11	28 (19.2%)
Chronic nonspecific adenitis	27	26	53 (36.3%)
Metastatic carcinoma	5	11	16 (10.9%)
Lymphoma	7	8	15 (10.3%)
Pyogenic lympadenitis	-	2	2 (1.4%)
Unsatisfactory	6	4	10 (6.8%)
Total	**72**	**74**	**146 (100%)**

cases were 72 and 74 respectively accounting for a ratio of 1:1.

Cytopathological Analysis

The incidence of metastatic carcinoma in female doubled that of male accounting for 23 as against 12 cases. The most common site of lymphadenopathy was the cervical group of lymph nodes accounting for (n = 56; 32.9%). Of the remaining cases, 24 (16.4%) occurred in the axillary group of lymph nodes. Nine cases (6.2%) occurred in the inguinal groups of nodes. Sub-mandibular, submental and preauricular groups accounted for (n = 17; 11.6%); (n = 3; 2.1%) and (n = 2; 1.4%) respectively. Generalized lymphadenopathy involving two or more group of lymph nodes accounted for 26 (17.8%) cases. Cytological diagnosis of superficial lymphadenopathy include: Nonspecific lymphadenitis occurring as the most common lesion constituting (n = 53; 36.3%). Reactive hyperplasia was (n = 28; 19.2%) while granulomatous inflammation was (n = 22; 15.1%). Others were metastatic carcinoma and lymphoma constituting (n = 15; 10.3%) and (n = 16; 11%) respectively. In all, unsatisfactory cases accounted for (n = 10; 6.8%).

Discussion

In this study 72% of cases were benign lesions (inflammatory and reactive hyperplasia) while 21.2% were malignant lesions (metastatic carcinoma and lymphomas). Thus, our finding is similar to, although slightly lower than work done by Hirachad et al[3] where benign and malignant lesions constituted 81% and 24% respectively. Nevertheless, this is at variance with report by Steel et al where malignant and benign lesions accounted for 59% and 34% respectively[7].

Indeed, there are several reasons attributed to this difference between our findings and Caucasian series. Firstly, most inflammatory lesions including tuberculosis and reactive non specific lymphadenitis are rare in Caucasians series as compared to Africans and other third World Countries[8] where poor environmental sanitation, poor health hygiene, overpopulation and poverty constitute major risk factors to ill-health. Whereas, all these risk factors have been fully controlled and eradicated in Western Countries. Furthermore, Caucasians, because of their lifestyle, are more predisposed to diseases associated with affluence including malignancies.[9,10,11] Again, in most Caucasian series, researches are highly standardized. Most centres in western countries do collaborative studies consisting of fine needle aspiration cytology with polymerase chain reaction (PCR) hybridization to confirm their diagnosis. In our locality this collaboration is not always available because of the financial implication involved. Hence our diagnosis may not be 100% specific and sensitive as some lesions may be wrongly diagnosed, thereby altering the exact incidence of malignant versus benign lesions in our local environment. In addition, most cases of cancer in our locality may go unreported. The reason may be due to lack of facilities and adequate cancer register and most cancer cases in our environment may prefer an alternative traditional therapy to orthodox therapy.

Now, among the inflammatory lesions in this work, the largest percentage was chronic non specific lymphadenitis and reactive hyperplasia accounting for 55.5% of all cytologically diagnosed lesions. This finding is in tandem with similar reports by Hirachad et al[4] and Egea et al[12] where non-specific reactive hyperplasia accounted for vast majority among studies of fine needle aspiration cytology. However, this is quite

different from reports documented in Pakistan where TB lymphadenitis was the most common lesion encountered.[8,13] Moreover, studies done by Shahid et al reported a very high incidence of TB lymphadenitis accounting for 66.9% of all cytological specimen.[13] Once more, Ahmed et al[4] reported 36% incidence of TB lymphadenitis in their study. Yet again, studies by Gupta in India also show that granulomatous lymphadenopathy was the most common lesions encountered.[2]

In this study, granulomatous lymphadenitis characterized by epitheloid macrophage accounted for 15.1% of all cases of superficial lymphadenopathy. In Nigeria and other developing countries TB is almost invariably synonymous with granulomatous lymphadenitis except proven otherwise. Similar report by Kamal et al[14] documented 13% of TB lymphadenitis of all cytological specimen. Reports have it that TB lymphadenitis was a rare finding in developed counties before the era of HIV/AIDS. Global reports have shown an increase in the incidence of TB lymphadenitis in this era of HIV/AIDS.[1,8,13,14] The reason for this global upsurge in TB lymphadenitis particularly in developing countries is attributable to the use of Direct observed treatment schedule (DOTS) regime for the treatment of pulmonary TB in HIV patients hence there is an increase in extra-pulmonary TB manifesting mostly as cervical TB lymphadenitis[15].

In our study, metastatic carcinoma accounted for 10.9% of all cases. This is in keeping with reports by Fatima et al where metastatic carcinoma accounted for 8.5% of the lesions[1]. Furthermore, similar report was also documented by Hirachad et al[4] and Hussain et al[16] where metastatic carcinoma accounted for 12.3% and 10.3% respectively. In all we reported 10.3% of lymphoma cases. This is justified by reports of Egea et al[13] where lymphomas cases constituted 9.5%. Nevertheless, our study is at variance with reports by Hirachad et al[3] and Tilak et al[17] where much lower incidence of lymphoma cases of 6.1% and 5.6% were respectively reported. The reason partly attributed for this variation is due to correlative studies of both cytological and histological analysis as evidenced by more specificity and sensitivity in terms of diagnostic accuracy.
In our study the male to female ratio was observed to be 1:1 and the age range was 2 to 83 years. However this finding is close to findings reported by other researchers.[3,17] Meanwhile in this study, the most common anatomical site for the superficial lymphadenopathy was the cervical group of lymph nodes. This constituted 32.9% of all anatomical sites. This was closely followed by axillary group of lymph nodes accounting for 16.4%. This again, is in close relation to reports by other researchers in other part of the globe.[4,17]

Conclusion

Currently, fine needle aspiration cytology is a veritable tool in the diagnosis of superficial lymphadenopathy. This may be recommended as the first line of investigation in the diagnosis of lymph node enlargement for patients who may not be able to afford the health cost of surgery and biopsy in our locality. Again, Fine needle aspiration cytology has been proven to be a reliable, cheap, easy tool with relatively much more economical advantages. Nevertheless, it is not 100% accurate in terms of sensitivity, specificity and precision. Therefore in superficial lymphadenopathy where diagnoses are not straight forward, biopsy for histology is required to confirm such diagnoses.

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