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Cervical lymphadenopathy *with* special reference to fine needle aspiration cytology corroborated with histological examination: A cross sectional study

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Abstract: Introduction: Cervical lymphadenoparthy is a common presentation of many diseases, though it is mostly tubercular in origin in developing countries. This cross sectional study was done to corroborate fine needle aspiration cytology (FNAC) findings with histopathological examinations (HPE) in cervical lymphadenopathy. Materials and methods: 120 patients of both sexes attending the FNAC unit of Nilratan Sircar Medical College and Hospital, Kolkata were enrolled in this study. They were evaluated by thorough clinical examination followed by routine investigations, FNAC and histopathological examination (HPE). Results: There was maximum corroboration of FNAC and HPE reports in tubercular lymphadenitis (76 v/s 76) and Hodgkin's disease (2 v/s 2) followed by metastatic carcinoma (20 v/s 16) and non specific lymphadenitis (14 v/s 5) respectively. Overall correlation was 88.4% (excluding 8 cases where FNAC results were inconclusive due to unsatisfactory smear). The sensitivity, specificity, positive predictive value and negative predictive value of FNAC to diagnose tubercular lymphadenopathies were 86.36%. 100.0%, 100.0% and 72.73% respectively. In case of metastatic CA, these were 100.0%, 96.15%, 80.0% and 100.0% respectively. Conclusion: FNAC is simple, safe, quick, cheap, acceptable yet accurate method of establishing the etiology in cases of cervical lymphadenopathy.

Keywords: Cervical Lymphadenopathy, Fine Needle Aspiration Cytology, Histopathology

1. Introduction

Cervical lymph node enlargement is a very common clinical condition. Common causes include tuberculosis (both typical and atypical mycobacteria), chronic pyogenic infections, malignant lymphoma, lymphatic leukemia, metastatic carcinoma etc. Excision of these affected lymph nodes followed by the histopathological examination in all cases and bacteriological examination of suspected tuberculous lymph nodes is the most reliable diagnostic tool. But it is time consuming; costly; requires hospitalization and help of surgeon, anesthesiologist, pathologist and microbiologist.

So, there is great necessity for a simple but accurate method to establish the etiology of lymphadenopathy. In this context, fine needle aspiration cytology (FNAC)

appears to be promising. Due to easy accessibility of target sites, FNAC appears to be of particular relevance in head and neck area. Furthermore, FNAC in head and neck area is easy due to better patient compliance, minimal invasiveness and avoidance of surgery which may be of paramount importance in situations like non-neoplastic, inflammatory or metastatic tumors[1]. This can be performed in the out patient department (OPD) and the report can be obtained within hours.

Routine use of FNAC also helps in pre-operative diagnosis and planning of surgery, It may be a mean of diagnosis in remote areas where histopathology are not available.

The purpose of our study was to evaluate the efficiency of FNAC vis-à-vis excision biopsy in cervical lymphadenopathy in patient attending the FNAC unit of Nilratan Sircar Medical College and Hospital, Kolkata, India.

2. Materials and Methods

After approval from institutional ethical committee and written informed consent of the patients, this study was conducted in Nilratan Sircar Medical College and Hospital, a tertiary care medical college hospital in eastern India. 120 patients of both sexes attending the FNAC unit were randomly enrolled in this study. However, patients with missing FNAC reports and those cases who could not undergo biopsy were excluded from the study. All patients were evaluated by thorough clinical examination followed by routine investigations, FNAC and histopathological examination (HPE). Examination processes were identical in each of the cases. The pathologists conducting HPE were unaware of the FNAC results. FNAC results were compared with HPE diagnoses. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated.

3. Results

Analysis of the results was made on the basis of relevant clinical background and the data obtained from the cases studied. The present series were comprised of 120 patients with cervical lymphadenopathy. Majority of the patients were female (61.67%) and between age group 11-20 years (40%) followed by 21-30 years (33.33%).

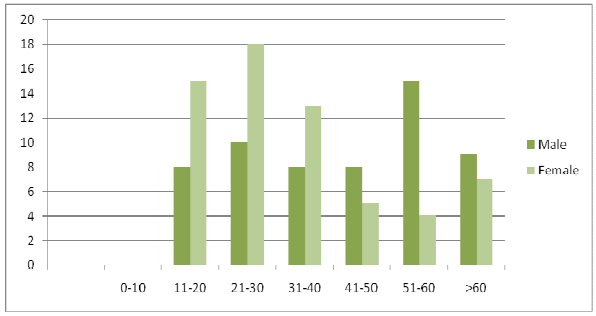

Figure 1. *Age and sex distribution of cervical lymphadenopathy*

Table 1. *Age and sex distribution of cervical lymphadenopathy*

Age in years	No of cases	Percentage (%)	Sex	
			Male (%)	Female (%)
0-10	0	0	0 (0%)	0 (0%)
11-20	48	40	12 (10%)	36 (30%)
21-30	40	33.33	12 (10%)	18 (15%)
31-40	04	3.33	0 (0%)	4 (3.33%)
41-50	12	10	8 (6.67%)	4 (3.33%)
51-60	14	11.67	12 (10%)	2 (1.67%)
>60	02	1.67	2 (1.67%)	0 (0%)
Total	120	100	46 (38.33%)	74 (61.67%)

Table 2. *FNAC diagnosis corroborated with HPE*

FNAC Diagnosis		Histopathological diagnosis				
		TBL	Met CA	NSL	HD	Necrosis
Tubercular Lymphadenitis (TBL)	76	76	-	-	-	-
Metastatic Carcinoma (Met CA)	20	-	16	2	-	2
Non specific Lymphadenitis (NSL)	14	9	-	5	-	-
Hodgkin's Disease.(HD)	2	-	-	-	2	-
Unsatisfactory Smears (U/S)	8	3	-	5	-	-
Total	120	88	16	12	2	2

The sensitivity, specificity, positive predictive value and negative predictive value of FNAC of lymphadenopathies to diagnose tubercular lymphadenopathies were 86.36%. 100.0%, 100.0% and 72.73% respectively. Similarly, the sensitivity, specificity, positive predictive value and negative predictive value of FNAC to detect metastatic CA were 100.0%, 96.15%, 80.0% and 100.0% respectively. FNAC was 100.0% sensitive, specific, positive predictive and negative predictive to detect Hodgkin's disease. However, in 8 cases FNAC results were inconclusive due to unsatisfactory smears, whereas 4 cases of HPE showed necrosis.

From table 2, it is seen that there was maximum corroboration of FNAC and HPE reports in tubercular lymphadenitis (76 v/s 76) and Hodgkin's disease (2 v/s 2) followed by metastatic carcinoma (20 v/s 16) and non specific lymphadenitis (14 v/s 5) respectively. Overall correlation was 88.4% (excluding 8 cases where FNAC results were inconclusive due to unsatisfactory smear).

4. Discussion

Lymphadenopathies are common presentation of patients of all ages and both sexes attending primary care settings[2]. Although the finding of lymphadenopathy sometimes raises fears about serious illness, it is, in patients seen in primary care settings, usually a result of benign infectious causes. Most patients can be diagnosed on the basis of a careful history and physical examination. The causes may include microbial, hematological, neoplastic, and connective tissue disorders[3].

Till date, there are several studies on cervical lymphadenopathies. Perhaps, cervical lymph nodes are the most frequently enlarged and biopsied of all peripheral lymph nodes[4-6]. Causes of cervical lymphadenopathy may vary in different countries. Tuberculosis is the commonest cause of lymphadenopathy in developing countries like India and should be considered in every case of granulomatous lymphadenopathy unless proved otherwise. Majority of the patients were between 11-20 years followed by 21-30 years. These findings correlated well with studies done by Pandit et al, who also reported majority of cases belonging to age group 21-40 years[4]. However, malignant metastases to cervical lymph nodes were mostly seen in older age groups[4].

Khiery et al opined that majority of the cervical lymph nodes were benign in nature and tubercular in origin which is also supported by our study[7]. The sensitivity and specificity of FNAC to detect tubercular lymphadenopathy in different studies vary from 81-92% and 86-98.9% respectively3,6,8,9. In this study, the sensitivity, specificity, positive predictive value and negative predictive value of FNAC to diagnose tubercular lymphadenopathies were 86.36%. 100.0%, 100.0% and 72.73% respectively.

Pandit et al reported that FNAC is highly sensitive and specific to detect metastatic CA[4]. It is strengthened in our study (sensitivity, specificity, positive predictive value and negative predictive value of FNAC to detect metastatic CA were 100.0%, 96.15%, 80.0% and 100.0% respectively).

The gold-standard procedure for the diagnosis of a neck mass is open biopsy of the mass with histological examination of the excised tissue[10]. However, open biopsy of a metastatic cervical mass prior to definitive treatment of the neck (usually by radical neck dissection) in patients with metastatic cervical carcinoma has been reported to lead to a higher incidences of wound complications, regional neck recurrence and distant metastases, than in patients who have no biopsy performed prior to definitive treatment[11]. Here, FNAC may be a better alternative. It may be a routine preoperative procedure to guide definitive surgery.

However, there are severe limitations like sampling error, unsatisfactory smears leading to repeat aspiration or excisional biopsy and subjective variation of interpretation which may be minimized with standardization and proper training of cytotechnologists and pathologists.

5. Conclusion

FNAC is simple, safe, quick, cheap, acceptable yet accurate method of establishing the etiology in cases of cervical lymphadenopathy. Its overall correlation in comparison to histopathological study is very high. Thus, FNAC can be a good screening procedure in the diagnosis of cervical lymphadenopathy.

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