Evaluation of fine needle aspiration cytology of cervical lymphadenopathy in Bir Hospital

Subash Khadka[1], Deependra Shrestha[2]

[1] Resident, [2] Associate Professor, Department of Otorhinolaryngology, Bir Hospital, National Academy of Medical Sciences, Kathmandu, Nepal

Correspondence
Dr. Subash Khadka
Bir Hospital,
National Academy of Medical Sciences,
Kathmandu, Nepal
E-mail: subash.002@gmail.com

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ABSTRACT

Background & Objectives: To correlate FNAC of cervical lymphadenopathy with the histopathology. **Materials and Methods**: Prospective study on 67 patients with cervical lymphadenopathy at the ENT Department, Bir Hospital, from January 2013 to July 2014. Patients were subjected to both FNAC and histopathology. **Results:** Thirty cases (44.8%) were females and 37 cases (55.2%) were males. Tuberculosis was most common disease in 30(44.80%) patients. Sensitivity, specificity, and diagnostic accuracy of FNAC to diagnose tubercular lymphadenopathies were 83.0%, 100.0%, and 92.54% respectively. Overall correlation of FNAC to histopathology was 86.57%. **Conclusion:** FNAC is very simple and accurate technique for diagnosis of cervical lymphadenopathy.

Key words: Cervical lymph nodes; FNAC; Histopathology; Reliability and accuracy.

INTRODUCTION

Lymphadenopathy is an abnormal increase in size and/or altered consistency of lymph nodes. Cervical lymphadenopathy is one of the commonest clinical presentations of outdoor clinics of otorhinolaryngology in most hospitals. The etiology varies from an inflammatory process to a malignant condition [1]. Cervical lymphadenopathy is a common clinical finding, which can be related to reactive nodal hypertrophy, granulomatous processes, lymphoma and head and neck cancers or mimicked by nonnodal neck masses [2]. Enlarged palpable cervical lymph nodes are common and worrying presentation in adults as well as in children.

Fine needle aspiration cytology (FNAC) has been advocated as a useful method in comparison to more expensive surgical excision biopsies in developing countries with limited resources. FNAC of lymph node has become an integral part of the initial diagnosis and management of patients with lymphadenopathy due to early availability of results, simplicity, and, minimal trauma with less complication [3].

Aims and objectives

The aim of this study is to correlate the results of FNAC of cervical lymphadenopathy with the histopathology in an attempt to highlight the diagnostic accuracy and reliability of FNAC of lymph nodes with an emphasis on discordant cases between the cytology and the histopathology.

MATERIALS AND METHODS

This is a prospective study on 67 selected patients with cervical lymphadenopathy and was conducted at the Otorhinolaryngology Department, National Academy of Medical Sciences, Bir Hospital, Kathmandu from January 2013 to July 2014.

Cervical nodal enlargement was the first clinical manifestation of the patients in all cases. Patients more or equal to 15 years of both genders were included. Patients with missing FNAC reports or those cases who could not undergo biopsy were excluded.

This study was limited to the selected cases that had undergone FNAC for the enlarged cervical lymph nodes, which were stained with Papanicolaou and Giemsa stain, followed by subsequent excisional biopsy of the same neck node with definitive histopathological diagnosis. All the slides were reviewed by the senior pathologist. In cases of discrepancy, histopathologic results were considered the gold standard. Sensitivity, specificity and accuracy of FNAC were analysed relative to histopathologic diagnosis.

Diagnostic sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), accuracy, and discordance rate were analysed by SPSS Software (21.0) (Table.1). All these values were compared with other studies.

Table: 1 Interpretation of test results

Test results	Diseased	Not Diseased
Test Positive	True Positive (TP)	False Positive (FP)
Test Negative	False Negative (FN)	True Negative (TN)

RESULT

Among the 67 studied cases with cervical lymphadenopathy that had undergone FNAC, 30 (44.8%) were females and 37 (55.2%) were males. The age ranged from 15-71 years with mean age of 38.09 years and majority of cases were in age group of 25-34 accounting for 28.4% (Table.2).

Tuberculosis was most common disease found in 30(44.8%) patients, reactive lymphadenitis in 11 (16.4%), granulomatous in 10(14.9%), metastatic in 8(11.9%), Non-Hodgkin's lymphoma in 5(7.5%), Hodgkin's lymphoma in 2(3.0%) and chronic inflammatory lesion in 1(1.5%) (Fig.1). The sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of FNAC of lymphadenopathies to diagnose tubercular lymphadenopathies were 83.0%, 100.0%, 100.0%, 88.1% and 92.54% respectively (Table.3). Similarly, sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy for granulomatous lymphadenopathies were 90.0%, 98.0%, 90.0%, 98.0% and 97.01% respectively (Table.4).

Table: 2. Age distribution in patients with cervical lymphadenopathy.

Age group	Sex		Total	Percentage
	Female	Male		
15-24	8	4	12	17.91%
25-34	12	7	19	28.36%
35-44	2	11	13	19.40%
45-54	3	5	8	11.94%
55-64	4	8	12	17.91%
64 above	1	2	3	4.48%
Total	30	37	67	100.00%

In this study 9 (13.43%) cases, cytological diagnosis was not correlating with histopathological diagnosis but FNAC and histopathology correlated in 86.57% cases (Table.5).

Table: 3. Comparative analysis of cytological diagnoses by histopathological diagnoses in patients with tubercular cervical lymphadenopathy .

		HPE		Total
		Tubercular lymphadenitis	Other	
FNAC	Tubercular lymphadenitis	25	0	25
	Other	5	37	42
Total		30	37	67

Table: 4. Comparative analysis of cytological diagnoses by histopathological diagnoses in patients with granulomatous cervical lymphadenopathy.

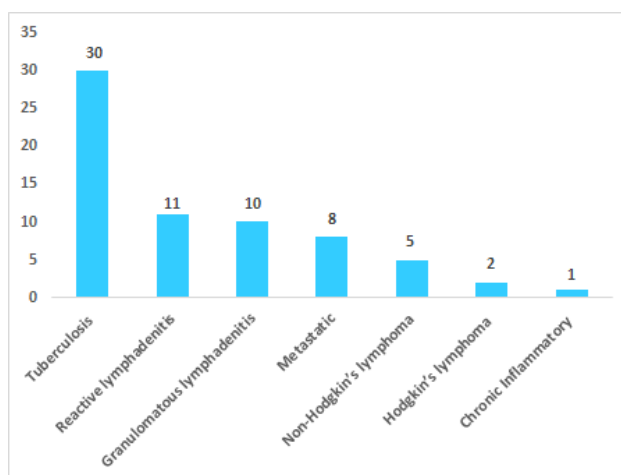|		HPE		Total
		Granulomatous	Others	
FNAC	Granulomatous	9	1	10.00
	Others	1	56	57.00
Total		10	57	67.00

Fig: 1. Frequency of different disease process.

DISCUSSION

In our Department, cervical lymphadenopathies are most common presentation in head and neck unit. Several studies on lymphadenopathy have shown that cervical lymph nodes are the most frequently enlarged and biopsied of all peripheral lymph nodes.[4, 5] Tuberculosis is the commonest cause of lymphadenopathy in developing countries and should be considered in every case of granulomatous lymphadenopathy unless proved otherwise.

Results show that FNAC can be used as sole diagnostic modality in cervical lymphadenopathy because majority of FNAC result was same as histology. Similar observation was observed by

Table: 5. Correlation of FNAC with HPE.

Diagnosis	HPE	FNAC correlating	FNAC not correlating	Discrepancies
Chronic inflammatory lesion	1	0	1	1.49%
Granulomatous lymphadenitis	10	9	1	1.49%
Hodgkin's lymphoma	2	2	0	0.00%
Metastatic carcinoma	8	7	1	1.49%
Non-Hodgkin's lymphoma	5	4	1	1.49%
Reactive lymphadenitis	11	11	0	0.00%
Tubercular lymphadenitis	30	25	5	7.46%
Total	67 (100%)	58 (86.57%)	9 (13.43%)	

different studies.[6, 7]

Ahmed evaluated the accuracy and efficacy of fine needle aspiration cytology in cervical lymphadenopathy in 50 patients. Sensitivity was 95.8%, Specificity was 100%, and Accuracy was 93.0%. Tuberculosis was the most common disease found in 34(68%) patients followed by metastatic carcinoma in 6(12%) patients.[6]

Hafez et al in retrospective study conducted on 157 selected patients. The cytological diagnoses were found to be benign in 48 cases (30.6%) and malignant in 109 cases (69.4%). The overall diagnostic sensitivity, specificity, positive predictive value, and negative predictive value of FNAC of cervical lymph nodes were 90.9%, 67.2%, 82.6%, and 81.3%, respectively. The overall diagnostic accuracy was 82.2% (129/157), while the overall discordance rate was 17.8% (28/157). The diagnostic accuracy of reactive lymphoid hyperplasia, chronic necrotizing lymphadenitis, chronic granulomatous lymphadenitis, metastatic carcinoma, Hodgkin lymphoma, and Non Hodgkin lymphoma was 85%, 83.3%, 70%, 100%, 77.8%, and 75%, respectively.[8]

Prasad reported FNAC in 2,216 cases of clinically significant lymphadenopathy five years. He correlated FNAC with histopathology in 1041 cases. The sensitivity rates of FNAC in tuberculosis, metastatic tumours, Hodgkin's lymphoma, and non-Hodgikn's lymphoma were 83.3, 97, 30, and 80.3% respectively, the specificity were 94.3, 98.9, 98.6, and 97.4% respectively. They concluded that FNAC is a simple, inexpensive procedure, and when complemented by appropriate

immunocytochemical studies is accurate and reliable for routine diagnosis of lymphadenopathy.[9]

In this study we found FNAC is highly accurate in the diagnosis of tubercular, reactive, granulomatous and metastatic lymphadenopathy. The simplicity and cost-effectiveness make it most suitable for use on outpatient basis.

CONCLUSION
FNAC is very simple and accurate technique for diagnosis of cervical lymphadenopathy. Can distinguish tubercular lymphadenitis from reactive and granulomatous lymphadenitis in majority of cases. So, it can be used as an initial and diagnostic investigation for routine screening of cervical lymphadenopathies.

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