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Cytological evaluation of cervical lymphadenopathy in a tertiary care centre, Govt. Medical College Kathua: Two year study

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Abstract
FNAC is a well-established, reliable, quick and minimally invasive method of diagnosis in palpable masses at various sites. In developing countries like India where tuberculosis is the commonest cause of lymphadenopathy, FNAC becomes much more important tool in diagnosing the cervical lymph nodes. The present study was carried out to describe the cytomorphological patterns of cervical lymph nodes and its utility in establishing a diagnosis. All lymph node aspirates done in cytology laboratory of our department over a period of two years [September 2019 to August 2021] were included in the study. Of the total 169 cases, 68 were diagnosed as non- specific reactive lymphadenitis, 38 tubercular lymphadenitis, 23 as metastatic carcinoma, 22 acute suppurative lymphadenitis, 08 granulomatous lymphadenitis, 6 non-Hodgkins lymphoma, 01 each case of Hodgkins lymphoma, Langerhans cell histiocytosis, Kimuras disease & Rosai Dorfman disease. Fine needle aspiration can be used as first line of investigation for evaluating patients with lymphadenopathy which has proven clinical value, diagnostic accuracy, sensitivity & specificity.

Keywords: Cytological evaluation, lymphoma, tuberculosis, lymph node hyperplasia, metastatic malignancy, lymphadenopathy, benign and malignant

Introduction
Cervical lymphadenopathy is common in clinical practice and is usually defined as cervical lymph node measuring more than 1cm in diameter. Cervical lymphadenopathy can be due to Infection, Autoimmune diseases or Malignancy. It is common in adults as well as in children. Cervical lymphadenopathy is further classified into acute lymphadenopathy (2 weeks duration), Subacute lymphadenopathy (2-6 weeks) and Chronic lymphadenopathy is considered when lymphadenopathy does not resolve by 6 weeks. Lymphadenitis refers to lymphadenopathy that are due to inflammatory conditions in which there is nodal enlargement, pain, skin changes, fever, edema and pus formation. Sensitvity and specificity of FNAC cytology have been documented in several studies [1-3]. FNAC of cervical lymph node is carried out using an 18 to 23 gauge needle with 20 ml syringe. The main benefit of FNAC is to avoid the need for surgical biopsy, which requires local or general anaesthesia, increased hospital stay and costs. It is a least expensive method for investigating lymphadenopathy in developing countries like India. The main objective of this study to study various cytological patterns associated with lymphadenopathies & to the study the frequency of various neoplastic versus non-neoplastic lesions of lymph nodes.

Materials and Methods
The study was carried out on one hundred and sixty nine cases (169) attending outpatient services of different clinical departments in Govt. Medical College and Associated Hospitals, Kathua (J&K) with enlarged cervical lymph nodes between September 2019 to September 2021 using a 22 gauge needle and a 20 ml syringe. Samples were smeared onto glass slides and fixed in Isopropyl alcohol and stained with Papanicolaou stain. Air dried smears were stained by Romanowsky method using May-Grunwald-Geimsa's stain. Based on the cytomorphological patterns observed, the cases were categorised into the following groups:

1. Non-specific Reactive lymph node hyperplasia
2. Suppurative lymphadenitis
3. Tubercular lymphadenitis (AFB Positive)
4. Granulomatous lymphadenitis (AFB Negative)
5. Metastatic Malignancy: Metastatic Malignancy was subdivided according to cytological features
6. Lymphoproliferative disorders/Lymphomas: Hodgkins and Non Hodgkins lymphoma

Results

In this study, 169 patients were subjected to FNAC for cervical lymphadenopathy. There were 89 males and 83 females in the study (Table 3). The male female ratio in the study was 1:0.89. The age at presentation ranged from 5 months to 82 years (Table 1). Maximum number of patients were in the age group 0-10 years (34 cases, 20.71%) followed by 11-20 years groups (30 cases, 17.75%), 21-30 years (35 cases, 20.17%) 31-40 years (22 cases, 13.01%), 4150 years, (13 cases, 7.69%), 51-60 years 50 years, (13 cases, 7.69%), 51-60 years, (13 cases,7.69%), 61-70 years (14 cases, 8.28%), 71-80 years, (5 cases, 2.95%) 81 years and above (2 cases, 1.18%)

Table 1: Age wise distribution of cervical lymph node lesions

S. No	Age groups	Number	Percentage
1	0-10	34	20.71%
2	11-20	30	17.75%
3	21-30	35	20.71%
4	31-40	22	13.01%
5	41-50	13	7.69%
6	51-60	13	7.69%
7	61-70	14	8.28%
8	71-80	5	2.95%
9	81 and above years	2	1.18%

Table 2: Distribution of cervical lymph node lesions

S.No	Type of Lesions	No. of Patients	Percentage
1	Neoplastic	31	18.34%
2	Non Neoplastic	138	81.66%

Table 3: Gender wise distribution of cervical lymph node lesions

S. No	Gender	No. of Patients	Percentage
1	Male	89	52.66%
2	Female	80	47.34%

Of the 169 patients, 138 patients were having Non neoplastic lesions (81.66%) and 31 patients were having Neoplastic lesions (18.34%) [Table 2]. Neoplastic lesions (Table 4) were further divided into metastatic lesions (23 cases, 74.19%), Hodgkin Lymphoma (1case, 3.22%), Non Hodgkins lymphoma (6 cases, 19.35%) & Langerhans cell Histiocytosis (1 case, 3.22%)

Table 4: Distribution of neoplastic lesions in cervical lymph nodes

S.No	Type of Lesions	No. of Patients	% Age
1	Metastatic	23	74.19%
2	Hodgkin Lymphoma	1	3.22%
3	Non-Hodgkin Lymphoma	6	19.35%
4	Langerhan Cell Histiocytosis	1	3.22%

Non neoplastic lesions (Table 5 were further subdivided into Tubercular lymphadenitis (33 cases, 27.54%), Reactive lymph node (68 cases, 49.27%), Granulomatous lymphadenitis (8 cases, 5.80%), A cute suppurative lymphadenitis (22 cases, 15.94%) kimura's disease (1case. 72%), Rosai Dorfman's (1case, 72%)

Table 5: Distribution of Non neoplastic lesions in cervical lymph nodes

S.No	Type of Lesions	No. of Patients	% Age
1	Tubercular Lymphadenitis	38	27.54%
2	Reactive Hyperplasia	68	49.27%
3	Granulomatous Lymphadenitis	8	5.80%
4	Acute Suppurative Lymphadenitis	22	15.94%
5	Kimura's Disease	1	0.72%
6	Rosai Dorfman's Disease	1	0.72%

Discussion

The total number of patients which were subjected to FNAC were 169. A major proportion of lymphadenopathies in the study were due to benign conditions (81.66%) which was in accordance to other earlier study in which 86.4% of the lesions were benign. AL Alwan *et al.* [4] and Narang *et al.* [5] also showed benign lesions in 55.33% and 61.6% of the lymph nodes, respectively. Pranjali Sejwal *et al.* [6] also showed Benign lesions were 77% and Malignant 23%. A round, firm, well defined lymph node that is present for more than 8 weeks or a lymph node that is fixed to the skin, deep anatomic planes or other lymphoid region should be considered for FNAC regardless of location, patient age or symtoms. Viral, bacterial and mycobacterial infection are the most common causes of benign regional lymphadenopathy. The well-defined role of FNAC in the investigation of lymphadenopathy has previously been studied. In the present study, 138 (81.66%) out of 169 were benign in nature, whereas 31 cases had a malignant pathology. Among the benign cases of lymphadenopathy, the most common was Reactive lymphadenopathy accounting for 68 cases (49.27%) followed by Tuberculous lymphadenitis (38 cases, 27.54%). The high incidence of tuberculosis in the study may be due to endemicity of the disease [10, 11]. Moreover, the most common form of extra-pulmonary tuberculosis is tubercular lymphadenitis with cervical lymph node being the most commonly involved group [12].

In a study carried out by Chandralekha Janagam *et al.* [1] on 200 FNAC cases of cervical lymphadenopathy, they found that 47.5% were due to reactive lymphadenopathy and 30% were due to tubercular lymphadenitis. FNAC is a reliable investigation in the diagnosis of tubercular lymphadenitis provided Ziehl Nelson stain is added for the identification of acid fast bacilli to increase the diagnostic accuracy [7]. AFB positivity is maximum in cases showing caseous necrosis with occasional epitheloid cells. The presence of acid fast bacilli in smears is directly proportional to the necrosis and inversely to the granulomas. Sometimes in absence of AFB positivity, the diagnosis of tuberculosis was given in those lesions with strong clinical suspicion, raised ESR and chest X-ray lesions.

The present study also shows higher incidence of malignancies [Table 6] particularly metastases in the elderly age groups (50-80 years). However 4 cases in age group (30-50 years) were also documented with lowest being 30 years. FNAC has a documented higher sensitivity in the diagnostic work up of metastatic malignancies which may be due to the fact that the metastatic carcinoma cells are usually abundant and their cytologic features are different to that of the cells of normal or hyperplastic lymph nodes. In present study, metastatic squamous cell carcinoma was

found in majority of the cases (23 cases out of 31 cases, 74.19%). Hirachand *et al.* [3] also noted that the commonest type of metastatic carcinoma to the lymph node was of squamous cell carcinoma variety. Chandralekha Janagam *et al.* [1] also found 66.7% of metastatic carcinoma to the lymph node was of squamous cell carcinoma which is almost similar to our study which shows the percentage to be 74.19%.

Cervical lymph nodes particularly, high jugular and posterior cervical nodes, drain the head and neck area and may harbour metastatic carcinomas originating in the nasopharynx, tonsillar fossa, tongue, floor of mouth, thyroid, larynx, facial skin and scalp. In our present study, findings support the established fact that metastatic squamous cell carcinoma of head and neck is frequent after the age of 40.

Carcinomas of nasopharynx or oropharynx are notorious for presenting with metastases in the cervical lymph nodes while the primary neoplasm remains unnoticeable. FNAC is a useful prognostic tool in stage III cancers wherein metastases to the regional lymph nodes is usually found. It also aids in the diagnostic work up of a metastatic tumour of unknown origin. The suggested protocol for the management of patients with cervical lymphadenopathy without any obvious primary site of origin starts with FNA to establish a cytologic diagnosis. In recent years, FNAC of lymph nodes supplemented by ancillary studies has been increasingly accepted as an approach for primary diagnosis of reactive lymphoid lesions and lymphomas. Cytomorphologically, cases of metastatic squamous cell carcinomas showed sheets of polygonal cells with moderate amount of eosinophilic cytoplasm, high nucleocytoplasmic ratio and pleomorphic hyperchromatic nuclei with irregular nuclear borders against necrotic and lymphocytic back round of the 23 cases of metastatic cancers, there were 5 cases of adenocarcinoma which included 2 cases of papillary carcinoma thyroid, 3 cases of poorly differentiated adenocarcinoma. Cytomorphologically, these cases showed round to oval cells arranged in sheets with focal acinar or papillary arrangement. Individual cells showed scant to moderate amount of eosinophilic cytoplasm, pleomorphic vesicular nuclei showing prominent nucleoli. Papillary carcinoma of thyroid showed focal nuclear grooves and inclusions.

Table 6: Type of metastatic deposits in cervical lymph node cytology

S. No	Type of Metastases	Number of Patients
1	Squamous Cell Carcinoma	18
2	Adenocarcinoma	5

Non-Hodgkin's lymphoma showed monotonous population of lymphoid cells with scanty basophilic cytoplasm and focal nuclear cleaving or indentations. Classical Reed Sternberg cells were found in Hodgkin's lymphoma scattered among polymorphous population of lymphoid cells. Cases of NHL presented clinically with generalised lymphadenopathy, while case of Hodgkin's lymphoma presented with localised lymphadenopathy

Conclusion

Different lesions causing cervical lymphadenopathy can be diagnosed on FNAC. In the present study, the most common lesion identified were reactive lymphadenopathy, tubercular lymphadenopathy and metastatic malignancies including squamous cell carcinoma.

FNAC combined with clinical features can be used in the work up of lymph node lesions. These diagnosed lesions can now further be managed depending upon the cause by this simple, cost effective, easy method.

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