

MALIGNANT CERVICAL LYMPHADENOPATHY AMONG FINE NEEDLE ASPIRATION CYTOLOGY IN A TERTIARY CARE CENTER IN FAR WESTERN NEPAL: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Metastatic cervical lymphadenopathy is a diagnostic and therapeutic challenge. The utility of Fine Needle Aspiration Cytology is well established in diagnosis of metastatic lymph nodes, new onset, or recurrence. This study aims to find the prevalence of metastatic cervical lymphadenopathy among fine needle aspiration cytology in a tertiary care center in far western Nepal.

Materials and Methods: This is a descriptive cross-sectional study carried out in Seti Provincial Hospital and Maya Metro Hospital, Dhangadhi, Kailali, Nepal between July 2018 to December 2019. Total 534 cervical lymph node aspirations were performed during this period out of which 48 cases which were cytologically proven as malignant lymph nodes. Clinical chart and cytology report of patients with malignant lymph nodes were reviewed.

Result: Out of 534 cervical lymph node aspirations performed during study period, number of malignant lymph nodes was 48 (8.99%). Among malignant lymph nodes (n=48), primary hematolymphoid malignancy were 14 (29.17%) and metastatic cervical lymphadenopathy were 34 (70.83%). Metastatic squamous cell carcinoma was the most common etiology of metastatic cervical lymphadenopathy followed by nasopharyngeal carcinoma and papillary carcinoma of thyroid.

Conclusion: Fine needle aspiration cytology has been proved to be a valuable tool in initial evaluation of metastatic cervical lymphadenopathy in resource limited settings. Metastatic squamous cell carcinoma is the most common diagnosis in metastatic cervical lymphadenopathy.

Keywords: fine needle aspiration; lymphadenopathy; metastatic; Nepal

INTRODUCTION

Lymphadenopathy is one of the commonest clinical presentation in outpatient clinic of many hospitals and quite worrying to patients.¹ Enlarged lymph node can be the first clinical presentation of metastatic disease in patient suffering from non-hematological malignancies.²

The utility of Fine Needle Aspiration Cytology (FNAC) is well established in diagnosis of metastatic lymph nodes, new onset or recurrence.³ It is easy, cost effective, less time consuming, less invasive and well tolerated by the patient.⁴ Cytological diagnosis in case of metastatic lymphadenopathy is very useful guide to the clinician towards further evaluation and management of patients in resource limited settings and in hands of skillful pathologist can avoid the need for excision biopsy.⁵

In this study, we aim to find the prevalence of metastatic cervical lymphadenopathy among fine needle aspiration cytology in a tertiary care center in far western part of Nepal.

MATERIALS AND METHODS

This is a descriptive cross-sectional study conducted in Seti Provincial Hospital and Maya Metro Hospital, Dhangadhi, Kailali, Nepal between July 2018 to December 2019. Total 534 cervical lymph node aspirations were performed during this period out of which 48 cases which were cytologically proven as malignant lymph nodes were studied. Inclusion criteria were cervical lymph node involvement, all age and gender. Exclusion criteria

were FNAC smears diagnosed as reactive hyperplasia, suppurative lymphadenopathy, granulomatous or tubercular lymphadenopathy.

After informed consent, aspiration was done using 22 gauge needles with standard aseptic precaution. Two slides were air dried and stained with May Grunwald Giemsa (MGG) stain and remaining two slides were fixed in 95% ethanol and Papanicolaou (PAP) stain was done. All FNAC were carried out, examined and reported by coauthor, a senior consultant pathologist.

Data analysis was done using SPSS version 21. Results were presented in numbers and percentages.

RESULTS

Out of 534 cervical lymph node aspirations performed during study period, number of malignant lymph nodes was 48 (8.99%). Among malignant lymph nodes (n=48), primary hematolymphoid malignancy were 14 (29.17%) and metastatic cervical lymphadenopathy were 34 (70.83%). Among total cervical lymph node aspirations (n=534), percentage of primary hematolymphoid malignancy and metastatic cervical lymphadenopathy were 2.62% (n=14) and 6.37% (n=34) respectively.

Primary Hematolymphoid malignancy: 9 patients were male and 5 patients were female. Median age group was less than 10 years (n=4) and 21-30 years (n=4). 9 cases were of Non-Hodgkin's Lymphoma, 2 cases of Hodgkin's Lymphoma and 3 cases were of acute lymphoblastic lymphoma / leukaemia.

Metastatic Lymphadenopathy: 19 patients were male (55.9%) and 15 patients were female (44.1%). Median age group was 51-60 years (n=10). (Fig.1)

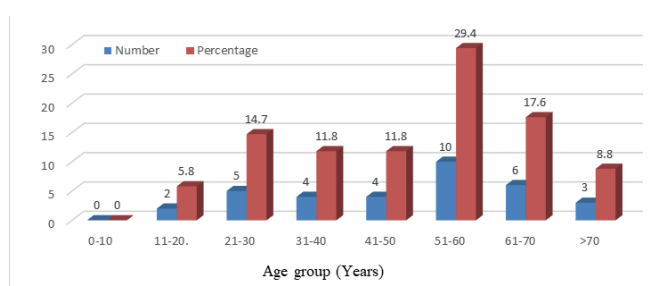


Fig 1. Age distribution of metastatic cervical lymphadenopathy

Metastatic squamous cell carcinoma was diagnosed in 13 out of 34 cases (38.2%) of metastatic cervical lymph nodes which was the most common etiology of metastatic cervical lymphadenopathy followed by nasopharyngeal carcinoma and papillary carcinoma of thyroid. Primary pathology could not be identified cytologically in 6 patients. (Table. 1)

Table1: Etiology of metastatic cervical lymphadenopathy

Diagnosis	Number	Percentage
Squamous cell carcinoma	13	38.2
Nasopharyngeal carcinoma	5	14.7
Papillary carcinoma thyroid	4	11.8
Small cell carcinoma	3	8.8
Metastatic adenocarcinoma	1	2.9
Metastatic melanoma	1	2.9
Poorly differentiated carcinoma	1	2.9
Primary not identified	6	17.6
Total	34	100.0

DISCUSSION

FNAC is established as an part of initial investigation of patients with metastatic lymphadenopathy due to early availability of results, minimal trauma and less complications.⁶ More than 90% of lymph node metastasis can be diagnosed by initial aspiration.⁷ Lymph node metastasis is one of the major adverse prognostic factors that influence not only the treatment plan but also the outcome of cancer patients.⁶

In our study, frequency of metastatic cervical lymphadenopathy is 6.36 % of total cervical lymph node aspirations. Bhatta et al.,⁸ Dwivedee et al.,⁹ Mainali et al.,¹⁰ and Hirachand et al.,¹¹ also reported metastatic cervical lymphadenopathy in 6.32%, 10.6%, 7.11% and 12.3% cases respectively. There is slight male preponderance in both primary hematolymphoid (male: female = 1.8:1) and metastatic lymphadenopathy (male: female = 1.26:1) which was also seen in other studies.^{6,11} Primary hematolymphoid malignancy were more common in children and young adults whereas metastatic lymphadenopathy were more common in old age after 5th decade of life, finding similar to study by Quadri et al.,⁶ and Bhatta et al.⁸

We found 14 cases of hematolymphoid malignancy among which Non-Hodgkin's lymphoma was commonest. Non-Hodgkin's lymphoma (Fig.2) are a group of lymphoproliferative malignancies with varying morphological features depending on their histogenesis.¹² Cornerstone of cytodiagnosis of Hodgkins lymphoma is finding of classic Reed Sternberg cells or their mononuclear variants in an appropriate inflammatory background.¹³ Leukaemic infiltration of lymph nodes in cytological smears shows predominantly immature large lymphoid cells, two to three times size of small lymphocytes with scanty cytoplasm (lymphoblasts) admixed with mature small lymphocytes.¹⁴ Peripheral blood smear examination finding of increased lymphoblasts helps to differentiate leukaemic smears from lymphoma.¹⁴

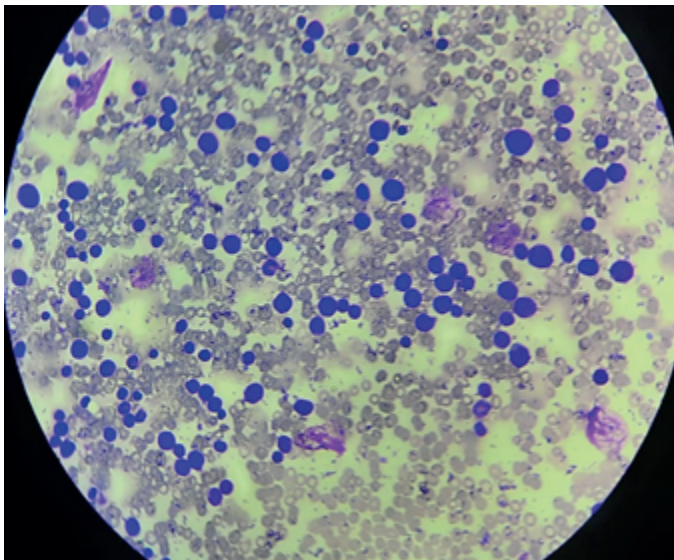


Fig.2 Non-Hodgkin's Lymphoma (X400 MGG stain). Microphotograph showing monotonous population of atypical lymphoid cells.

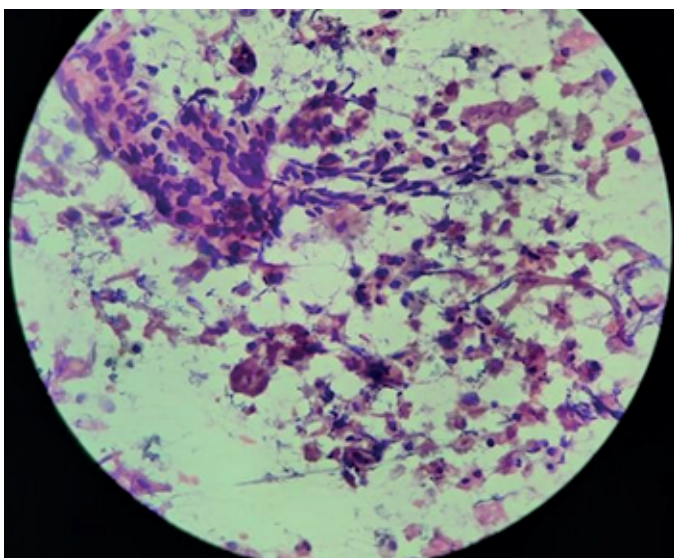


Fig.3 Metastatic Squamous cell carcinoma (X400 PAP stain). Microphotograph showing irregular fragment and dissociated atypical squamous cells exhibiting keratinization

Among metastatic lymphadenopathy, most common diagnosis was metastatic squamous cell carcinoma (Fig.3) which is similar to study Hirachand et al.,¹¹ Quadri et al.,⁶ and Bagwan et al.¹⁵ Oral cavity, larynx, pharynx as well as oesophagus and lungs are common primary sites in metastatic squamous cell carcinoma.^{6,15} Individual malignant cells have high N/C ratio, hyperchromatic nuclei and dense eosinophilic cytoplasm.¹⁶ Tumor cells show keratinization in well differentiated squamous cell carcinoma.¹⁵ Tumor cells often show necrotic material on background.² So, malignancy should be taken into consideration if an aspirate of an elderly patient shows scant cellularity with abundant necrotic material.^{15,17}

Five cases were diagnosed as nasopharyngeal carcinoma cytologically (Fig.4) which were supported with clinical correlation. Etiology of nasopharyngeal carcinoma (NPC) is multifactorial with race, genetics, environment and Epstein Barr virus (EBV) playing a role.¹⁸ Common presenting symptoms are asymptomatic cervical mass, serous otitis media, nasal obstruction or epistaxis.¹⁸ Histologically, there are three subtypes of NPC: type I (squamous cell carcinoma), type II (non-keratinizing carcinoma) and type III (undifferentiated carcinoma).¹⁹ Smear from type I NPC show clustered and dissociated tumor cells with abundant dense cytoplasm indicating squamous differentiation.²⁰ Cytology shows clusters of cohesive tumor cells with oval vesicular nuclei, prominent nucleoli and pale ill-defined cytoplasm with lymphocytes seen among the tumor cells in type II. Cases of type III NPC show exclusively dissociated and cluster population of tumor cells with lymphocytes and plasma cells in the background and can be confused with Hodgkin's lymphoma.²⁰

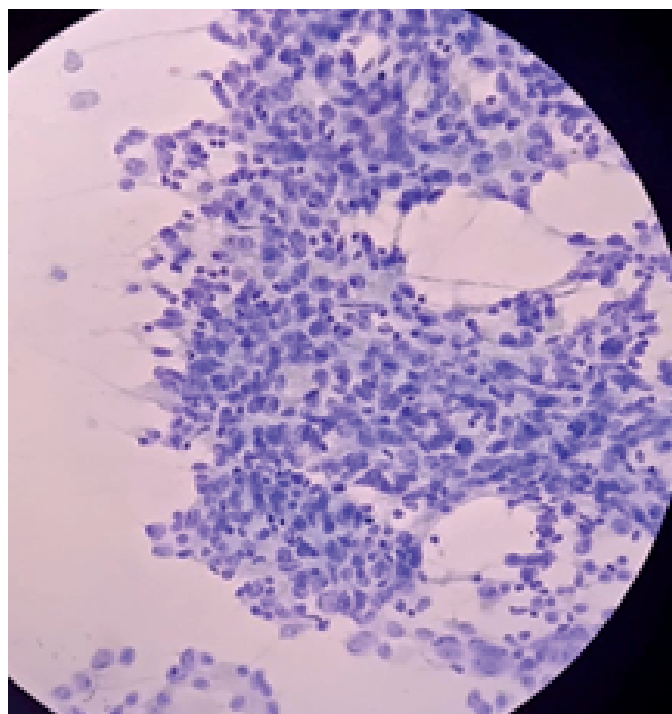


Fig.4 Metastatic Nasopharyngeal Carcinoma (X400 PAP stain). Photomicrograph revealing clusters of atypical cells having high N/C ratio, vesicular chromatin, visible prominent nucleoli and scant amount of cytoplasm.

There were 4 cases of metastatic papillary thyroid carcinoma (Fig.5). Papillary thyroid carcinoma shows cell clusters in papillary pattern with central fibrovascular core and characteristic vesicular nuclei with nuclear grooving and intranuclear inclusion.² Three patients had metastatic small cell carcinoma in our study. Primary site in case of small cell carcinoma is usually lungs.² Cytologic smears show diffuse small neoplastic cells larger than lymphocytes with dense, pyknotic nuclei and scanty

cytoplasm. Apparently viable larger tumor cells have vesicular nuclei with with granular and sometimes very coarse chromatin.²¹

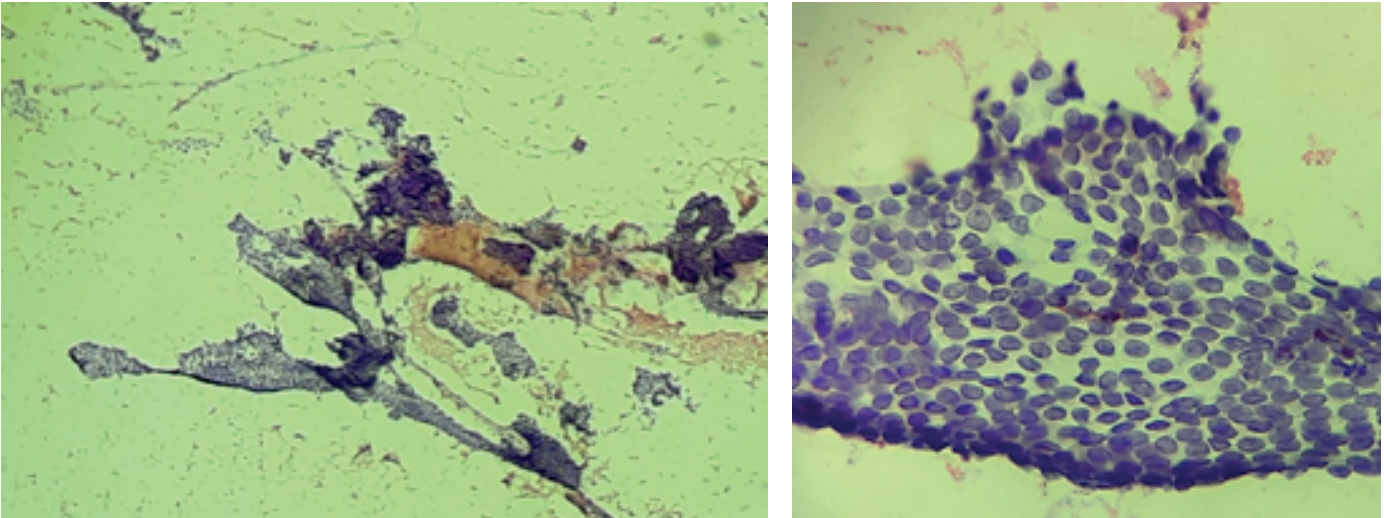


Fig. 5 A, 5B Metastatic papillary thyroid carcinoma (X400 PAP stain).

Microphotograph showing crowding and overlapping of follicular cells. Individual cells are oval to elongated have peripherally located chromatin and scant amount of cytoplasm. Some cells have nuclear grooving as well. (Right picture)

Microphotograph showing follicular cells arranged in papillary fragments, monolayered sheets and singly dissociated. (Left picture)

In our study, we found one case each of metastatic adenocarcinoma and melanoma. Primary pathology in metastatic adenocarcinoma in neck nodes can arise from nasal cavity and paranasal sinus, major salivary glands, minor salivary glands located in mucosal surface of oral cavity, pharynx, larynx and trachea.²² Melanoma (Fig.6) is notorious for metastasizing, can occur anywhere in head, neck , great toe, eye balls and lymph nodes.¹⁶ Metastatic melanoma in our case had primary in colon. Smears show marked nuclear pleomorphism , mitotic figures and intranuclear cytoplasmic invagination as well as intra and extracellular melanin pigment deposition.²³

We found one case of undifferentiated carcinoma. In six cases, primary pathology could not be identified cytologically. For these cases biopsy and immunohistochemistry was advised and referred to oncology centers for further diagnostic work up and management. We could not correlate cytology reports of all our patients with final histopathological diagnosis as patients were referred to specialized oncology center for further work up after initial diagnosis which is the major limitation of our study.

CONCLUSION

Metastatic cervical lymphadenopathy is a diagnostic and therapeutic challenge. Fine needle aspiration cytology

has been proved to be a valuable tool in initial evaluation of metastatic cervical lymphadenopathy in resource limited settings. Metastatic squamous cell carcinoma is the most common diagnosis in metastatic cervical lymphadenopathy.

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