Original Research Paper

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ROLE OF FNAC IN THE DIAGNOSIS OF LYMPH NODE MALIGNANCIES IN THE HEAD AND NECK REGION

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ABSTRACT **Background:** Enlarged lymph nodes are easily accessible for FNA and hence FNAC is a very simple and diagnostic tool for lymph node lesions. FNAC is rapidly emerging as a useful tool in the diagnosis of metastatic lesions of lymph nodes. Aims: The present study aimed at studying the role of FNAC in diagnosing lymph node malignancies. Methods: The study was conducted over a period of one year from November 2014 to October 2015. A total of 441 aspirations were performed on enlarged lymph nodes in the head and neck region. The cytological diagnosis was correlated with histopathological diagnosis wherever available. Results: Of the 441 aspirations performed on lymph nodes in the head and neck region, 81(18.37 %) were diagnosed with lymph node malignancies. Of 81 cytologically diagnosed cases, Histopathological correlation was available in 52 cases which were included in the study. The age group ranged from 8 to 82 years with males being more involved (78% cases). The overall diagnostic accuracy in diagnosing lymph node malignancies in our study came out to be 98.08% % and sensitivity was 100%. The cervical group of lymphnode is the most common group to be involved by malignancy and Squamous cell carcinoma being the most common histologic type.

KEYWORDS

Lymph nodes, FNAC(Fine Needle Aspiration Cytology), HPE(Histopathological Examination), Squamous cell carcinoma.

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Introduction:

An enlarged neck node is frequently the first clinical manifestation of a neoplastic process in the head and neck region.[8,16]Metastatic neck nodes are usually from the upper aerodigestive tract and salivary gland or as cancer of unknown primary. It can also be from the gastrointestinal tract, kidney, lung, cervix, ovary or urinary bladder.[10] FNAC is rapidly emerging as a useful tool in the diagnosis of metastatic lesions of lymph nodes.[11]

Enlarged lymph nodes are easily accessible for FNA and hence FNAC is a very simple and diagnostic tool for lymph node lesions. Malignancies in lymph nodes in our country are predominantly metastatic in nature with an incidence varying from 65.7%[4] to 80.4%[1] and lymphomas range from 2%[9] to 15.3%[1] among lymph nodes aspirated from all sites. Although HPE is considered to be gold standard in diagnosis especially in lymphomas, FNAC may be the only tool for diagnosis and further management of the patients in some cases of metastatic malignancy.[19]FNAC is a cost effective, simple procedure with minimal complications, is well tolerated by patients, can be done on an outpatient basis and is repeatable. It can also prevent unnecessary surgery that would have to be done to confirm the presence of metastasis.[10].The present study was undertaken to evaluate the role FNAC in diagnosis of lymph node malignancies.

Materials and methods:

The present study was conducted over a period of one year from November 2014 to October 2015 in the Cytology section of Pathology Department, GMC, Jammu.. A total of 441 aspirations were performed on lymph nodes in the head and neck region. A detailed history, clinical examination and relevant investigations were documented. FNAC of the enlarged lymph nodes was performed using 21 to 23 gauge needle attached to cameco syringe pistol taking all aseptic precautions. Smears were stained with Papanicolaou and May Grunwald Giemsa stains. The cytological diagnosis was correlated with histopathological diagnosis(HPE) wherever available.

Results:

Of the 441 aspirations performed on lymph nodes in the head and neck region, 81(18.37%) were diagnosed with lymph node malignancies. Of 81 cytologically diagnosed cases, Histopathological correlation was available in 52 cases which were included in the study. The age group ranged from 8 to 82 years with males being more involved (78% cases). The lymph nodes involved by malignancy were 1.5 cm or more in size. Cervical group of lymph nodes was the most commonly involved .Table 1 shows the cytologic diagnosis made in the lymph node aspirates.

Table 1: Cytologic Diagnosis by FNAC in the lymph node group in the study.

Organ of origin	Diagnostic Group	FNAC Diagnosis	Number of cases
	Secondary	Metastatic Squamous cell carcinoma	28(53.85%)
		Metastatic Adenocarcinoma	03(5.77%)
		Metastatic poorly differentiated epithelial malignancy	12(23.08%)
		Metastatic Small cell carcinoma	02(3.85%)
		Metastatic Medulloblastoma	01(1.92%)
	Primary	Hodgkin lymphoma	02(3.35%)
		Non Hodgkin Lymphoma	04(7.69%)
Total		52(100%)	

Metastatic malignancies constituted 46(88.46%) cases and lymphomas constituted 6 (11.54%) cases. Among the metastatic group, Squamous cell carcinoma was the most common diagnosis in 53.85% cases followed by poorly differentiated epithelial carcinoma in 23.08% cases. Histopathological correlation was available in all 52 cases. Sensitivity and accuracy were calculated. Table 2 shows histopathological correlation.

Table 2: Comparison of FNAC Diagnosis with Histopathological diagnosis.

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Organ of Origin	Diagnostic Group	FNAC diagnosis	Histopathological Diagnosis	Concordance
Lymph node	Malignant Tumor	Metastatic Squamous cell carcinoma(28)	Metastatic Squamous cell carcinoma(27)	+
			Pilomatricoma(1)	-
		Metastatic Adenocarcinoma(3)	Metastatic Adenocarcinoma(3)	+
		Metastatic Poorly Differentiated Carcinoma(12)	Metastatic Squamous Cell carcinoma(1)	+
			Metastatic Adenocarcinoma(2)	+
			Metastatic Poorly Differentiated Carcinoma (9)	+
		Lymphoma(6)	Lymphoma(6)	+
		Metastatic Small Cell Carcinoma(2)	Metastatic Small Cell Carcinoma(2)	+
		Metastatic Medulloblastoma(1)	Metastatic Medulloblastoma(1)	+
	Total	52	52	51/52

Histopathological examination of 28 cases of metastatic squamous cell carcinoma diagnosed on FNAC revealed metastatic squamous cell carcinoma in 27 cases (concordant) and pilomatricoma (discordant) in one. Out of 12 cases of poorly differentiated epithelial carcinoma, 3 could be characterized on subsequent histopathological examination (2 cases as metastatic adenocarcinoma and 1 case as metastatic squamous cell carcinoma). Rest 9 cases came out to be poorly differentiated metastatic epithelial malignancy on Histopathological Examination. All these 12 cases were taken as concordant with the FNAC diagnosis as diagnosis of metastatic malignancy was made in both groups. Three cases of metastatic adenocarcinoma were correctly diagnosed.There were 2 cases of metastatic Small cell carcinoma, one case of metastatic Medulloblastoma where FNAC diagnosis was concordant with histopathological diagnosis. Of the lymphomas, 2 cases were given suspicious diagnosis of Hodgkin lymphoma on cytology and both these cases had histopathological correlation. There were 4 cases of Non Hodgkin lymphoma which correlated histopathologically also. So, overall FNAC diagnosis was concordant in 51 out 52 cases giving a diagnostic accuracy of 98.08% and sensitivity in diagnosing malignant disease of 100%. Fig.1 to 4 depicts various lesions diagnosed on FNAC and subsequent histopathology.

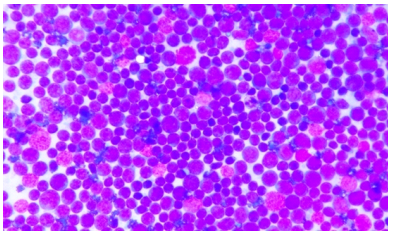

Fig.1: NHL, FNA smear showing monomorphic population of lymphoid cells (MGG X 400).

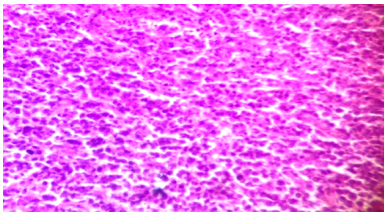

Fig.1b: NHL-Tissue section depicting monomorphic population of lymphoid cells (H&E X 100).

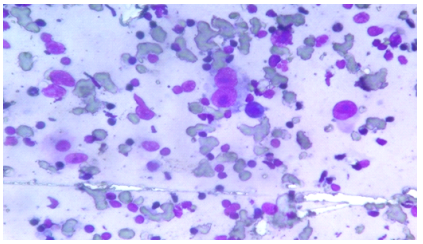

Fig.2a: Hodgkin's lymphoma-FNA smear showing characteristic RS cell in a polymorphic cell population (MGG X 400).

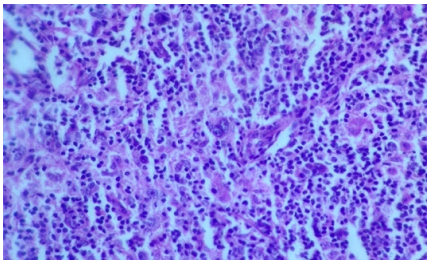

Fig.2b: Hodgkin's Lymphoma- corresponding tissue section (H&E X 100).

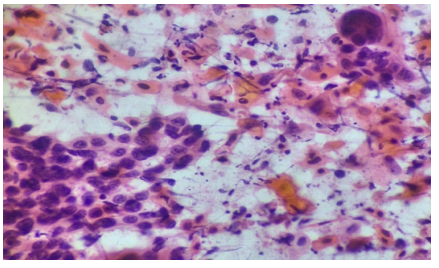

Fig.3a: FNA smears of Metastatic Squamous cell carcinoma in LN (Pap X 400).

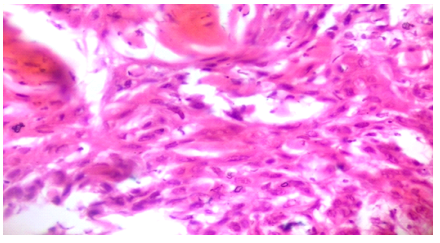

Fig.3b: Metastatic Squamous Cell Carcinoma-Corresponding tissue section (H&E X 400)

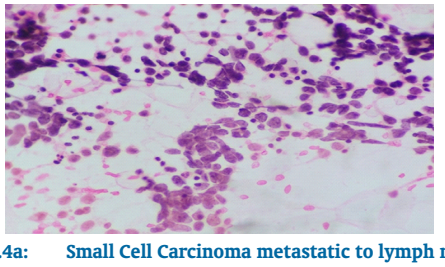

Fig.4a: Small Cell Carcinoma metastatic to lymph node-Pleomorphic poorly cohesive cells with little or no cytoplasm; nuclear moulding (Pap X 400).

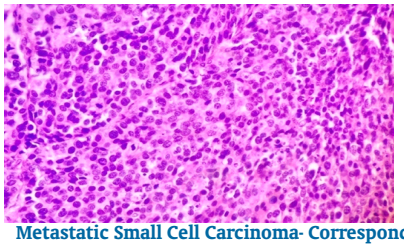

Fig.4b: Metastatic Small Cell Carcinoma- Corresponding tissue section (H&E X 400).

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Discussion:

Enlarged lymph nodes are accessible for FNAC and are of importance specially to diagnose secondary or primary malignancies.It plays significant role in developing countries like India, as it is a cheap procedure, simple to perform and has almost no complications.[1,4,9]The diagnosis given on the cytological material is often the only diagnosis accepted and sometimes there is no further correlation with histopathology, especially in cases of advanced malignancies.[19] In our study, 18.37 % yielded malignant diagnoses.Other studies have found the incidence to vary from 5.8%[9] to 25.03%[3,6,7,12,17].Metastatic lymph node involvement (88.46) was more common as compared to primary lymphoid neoplasms(11.54%).This is similar to other Indian studies[1,9,19] A study conducted in Bhagdad has reported more invovement by lymphomas(58.2%) as compared to metastatic disease(37.3%) and 4.4% involvement by leukemia.[2]The overall diagnostic accuracy in diagnosing lymph node malignancies in our study came out to be 98.08% % and sensitivity was 100%. Our observations were in concordance with studies conducted by various authors who reported an accuracy ranging from 82% to 100%[1,5,9,13,19] and sensitivity ranging from 97.9% to 100%.[1,6,14,19] There was one case which was reported as a case of metastatic Squamous cell carcinoma. It later on proved to be a case of Pilomatricoma. The squames aspirated from the lesion depicted hyperchromatic nuclei with prominent nucleoli at places which could have been the reason for misdiagnosing it as a case of metastatic Squamous cell carcinoma.

In a study conducted by Wong MP et al.[18], of the 16 cases of Fine needle aspiration biopsy of pilomatrixoma since 1982, only 25% were correctly diagnosed prior to excision. The most common pitfall encountered was a false positive or suspicious diagnosis of a carcinoma. Singal P et al. [15] have reported similar problem in which aspirate from one of the neck swellings revealed hyperchromatic nuclei and was reported to be metastatic deposits, which on histopathology proved to be Pilomatricoma.

The cervical group of lymph node is the most common group to be involved by malignancy and Squamous cell carcinoma being the most common histologic type. Similar findings have been reported by varoius authors in literature.[1,4,6,7,9,10,11] Among lymph node lesions males predominated the study. Males predominated the study Similar observations were reported by various authors in literature.[7,10,11]

Conclusion:

FNAC of lymph nodes is a very useful, rapid, safe, minimally invasive and cost effective technique.It gives early and accurate results and obviates the need for surgical biopsies.An early diagnosis of lymph node malignancies can be made with high accuracy and sensitivity.For the diagnosis of lymphomas, it can suggset a preliminary diagnosis which can be aided by subsequent histopathology and immunohistochemistry for confirmation.

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