Spectrum Of Cytological Findings In Patients With Lymphadenopathy In Rural Population Of Southern Haryana, India - Experience In A Tertiary Care Hospital

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Citation

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Abstract

Lymphadenopathy is of great clinical significance as underlying diseases may range from a treatable infectious etiology to malignant neoplasms. In fact, it is also essential to establish that the swelling in question is a lymph node. Fine Needle Aspiration Cytology (FNAC) plays a vital role in solving these issues, nowadays being recognized as a rapid diagnostic technique because of its simplicity, cost effectiveness, early availability of results, accuracy and minimal invasion. This study was conducted to evaluate the usefulness of FNAC as a diagnostic tool in the management of patients with superficial lymphadenopathy. The study was also carried out to know the distribution of various lesions among the different age groups. The present randomized study was undertaken to study cytological features of non-neoplastic and neoplastic lesions of enlarged lymph nodes by FNAC in 182 patients presenting with lymphadenopathy in the Maharaja Agrasen Medical College, Agroha village over a period of one year from January to December 2011. There were 100 male and 82 female patients with an age range of 1–70 years. Tuberculous lymphadenitis, reactive hyperplasia, metastatic carcinoma, suppurative lymphadenitis and lymphomas were seen in 35.7%, 31.3%, 20.3%, 9.9% and 2.7% respectively. Reactive hyperplasia was seen most often (60%) in first two decades of life, 58.9% tuberculous lymphadenitis in the second and third decades (66%) and incidence of metastatic carcinoma are high during and after 40 years of age. Cervical lymph nodes were involved in all types of lymphadenopathy. Metastatic lesions of lymph nodes were seen to be more common in males. Squamous cell carcinoma is the most common metastatic lesion.

INTRODUCTION

Lymphadenopathy is one of the most common clinical presentations of patients attending the outdoor department. Fine Needle Aspiration Cytology (FNAC) is a reliable, simple, safe, rapid and inexpensive method of establishing the diagnosis of lesions and masses at various sites and organs[1]. Lymph node aspiration is of great value for the diagnosis of lymphadenitis, lymphomas and metastatic carcinoma[(6,7)]. The present randomized study was undertaken to study non-neoplastic and neoplastic lesions of enlarged lymph nodes by FNAC in patients presenting with lymphadenopathy referred to cytology section of pathology department from the OPD/IPD of Maharaja Agresen Medical College, Agroha, (Hisar) over a period of one year. A study was carried out to know the overall prevalence of various causes responsible for cervical lymphadenopathy. The study was also carried out to know the distribution of various lesions among the different age groups. The present study also tried to evaluate the FNAC as a diagnostic tool in our clinical setup. FNAC is also done for confirmation of peripheral lymph node metastasis of a known and occult primary lesion and it can help the clinician to know about the primary site.

MATERIAL AND METHOD

A total of 182 patients presenting with superficial palpable lymph nodes, who were referred to cytology section of pathology department from the OPD/IPD of Maharaja Agrasen Medical College situated in Agroha village covering the rural population of southern Haryana, were studied over a period of one year. In each instance, a brief history and physical examination along with evaluation of relevant investigations, if available, was carried out. FNAC procedure performed by pathologist using 22-24 G needle attached to 10 - 20 mL syringe. Aspirated material was

smeared on the slides in each case. Slides were immediately put into the fixative solution and air-dried. Alcohol-fixed smears were stained by Haematoxylin and eosin and Papanicolaou method. The air-dried smears were stained with May-Grunwald-Giemsa (MGG) stain. Special stains like Ziehl Neelson (ZN) stain for acid-fast bacilli and Periodic Acid Schiff (PAS) stain were used whenever required.

RESULTS

The study included 182 patients with lymphadenopathy swellings. Out of 182 patients with palpable lymphadenopathy, in two (1%) cases, FNAC was inconclusive due to unsatisfactory smears. There were 84 (46.15%) female and 98 (53.84%) male patients with an age range of 1–70 years. Tuberculous lymphadenitis and reactive hyperplasia were the most common lesions seen (35.7% and 31.3% respectively), followed by metastatic carcinoma in 20.3%, suppurative lymphadenitis in 9.8% and lymphomas in 2.7% (Hodgkin's 1.09%, Non Hodgkin's 1.64%) of the cases (Table-1). Reactive hyperplasia was seen most often (60%) in first two decades of life, 58.9% tuberculous lymphadenitis in the second and third decades (66%) and incidence of metastatic carcinoma are high during fourth decade of life and after 40 years of age. Males showed preponderance of reactive hyperplasia, lymphoma and metastatic carcinoma, while tuberculous lymphadenitis showed a slight female preponderance. Cervical lymph nodes were involved in all types of lymphadenopathies (Table-III). Squamous cell carcinoma is the most common metastatic lesions of lymph node and comprise of 81.63% of the cases. (Table-V). Metastatic lesions of lymph node are more common in males whereas metastatic lesions from carcinoma breast were seen exclusively in females (Table-V). Cervical lymph node is the most common site for metastasis of squamous cell carcinoma. (Table-V). Axillary lymph nodes are common site for metastasis from breast malignancy.

Figure 1

Table 1: CYTOLOGICAL DIAGNOSIS OF 182 CASES OF LYMPHADENOPATHY

CYTOLOGICAL DIAGNOSIS	NO. OF CASES			PERCENTAGE (%)
	M	F	Total	
Tuberculous lymphadenitis	22	33	65	35.71
Reactive lymphadenitis	32	25	57	31.31
Suppurative lymphadenitis	09	09	18	9.89
Hodgkin's lymphoma	01	01	02	1.09
Non Hodgkin's Lymphoma	02	01	03	1.64
Metastatic carcinoma	27	10	37	20.33

Figure 2

Table 2: AGE AND INCIDENCE OF LYMPHADENOPATHY

Sr. No.	Cytologic Diagnosis	AGE DISTRIBUTION						
		0-10	11-20	21-30	31-40	41-50	51-60	>60
1	Tuberculosis Lymphadenitis	06	14	29	11	03	01	01
2	Reactive hyperplasia	17	17	15	05	-	01	02
3	Suppurative Lymphadenitis	05	04	04	01	03	01	01
4	Hodgkin disease	-	-	01	-	01	-	-
5	Non Hodgkin disease	-	-	-	02	-	-	01
6	Metastatic carcinoma	-	-	01	08	12	05	11

Figure 3

Table 3: Lymph node group involved in various type of Lymphadenopathy

Lymph node	Tuberculous Lymphadenitis		Reactive hyperplasia		Lymphoma				Metastatic	
					Hodgkin		Non Hodgkin			
	No. of cases	%	No. of cases	%	No .of cases	%	No. of cases	%	No. of cases	%
Cervical	57	87.69	53	81.53	2	100		-	34	91.89
Axillary	02	3.08	01	1.75	-		01	33.33	02	5.40
Inguinal	04	6.15	02	3.5	-		01	33.33	01	2.70
Generalized	02	3.08	01	1.75	-		01	33.33	-	-

Figure 4

Table 4: Comparison of the incidence of lymphadenopathy due to different aetiological factors

Aetiological Group	Patra et al 1983	Bhaskaran et al 1990	Khajuria 2006	Present Study
Tuberculous lymphadenitis	37.8 %	67.57 %	52.3 %	35.71%
Reactive hyperplasia	33.0 %	20.86 %	37.2 %	31.31%
Suppurative lymphadenitis	5.8 %	1.5 %	1.0 %	9.89%
Hodgkin's lymphoma	1.9 %	0.74 %	0.8 %	1.09%
Non Hodgkin's lymphoma	4.8 %	2.23 %	1.2 %	1.64%
Leukemic infiltration	0.9 %	-	-	-
Metastatic carcinoma	14.5	5.6	3.8	20.33%

Figure 5

Table 5: Incidence and distribution of Metastatic Lesions

Sr. No.	Metastatic Lesions	No. of Cases			Percentage
		M	F	Total	
1	Squamous Cell Carcinoma	27	04	31	83.78%
2	Adenocarcinoma	01	01	02	5.40%
3	Ductal carcinoma breast	_	02	02	5.40%
4	Papillary Ca of Thyroid	01	_	01	2.70%
5	Undifferentiated carcinoma	_	01	01	2.70%

DISCUSSION

FNAC is inexpensive, completely safe and quick method for diagnosis of lymphadenopathy and it reduces the need for surgical biopsy. We have presented our experience with 182 cases of lymphadenopathies over a period of one year. In the present study, diagnosis was based on definite cytomorphological findings with clinicocytological correlation. Our primary aim was to help the clinician in arriving at an early diagnosis in cases presenting with lymphadenopathy. The pattern of lesions consisted of tuberculous lymphadenitis, reactive lymphadenopathy, metastatic carcinoma, suppurative lymphadenitis, lymphoma and metastatic lymphadenopathy seen in our study, more or less is same as reported in other studies in India and other developing countries[2,8,10]. Maximum numbers of cases in our study are of tuberculous lymphadenitis. In India, tuberculous lymphadenitis is one of the most common types of lymphadenopathy encountered in clinical practice[2,8,9,10], whereas it is in sharp contrast to very low frequency of 1.6% in developed countries[11]. The highest incidence of tuberculous lymphadenitis was seen in second and third decades with female preponderance and decreasing incidence with age. Patra et al[8] had 37.8% cases of tuberculosis while the present study has 35.71% cases. This was quite close to our studies. A similar study was done by Khajuria et al[10], which showed Tubercular lymphadenitis as 52.3% and Bhaskara et al[9] found 67.57% (Table VII). All these authors' studies, including our study, suggest that Tubercular lymphadenitis is the most common cause of lymphadenopathies. The discrepancy in results is due to a wide variation in study age group and socio-economic condition of the patients. The highest incidence of reactive hyperplasia was seen in first two decades of life (74.5%) with a male preponderance. These findings are in agreement

with experiences of Gupta et al [6] and Lochan et al [12].

Metastatic malignancies are significantly more common in males. The superficial lymph nodes are common sites of metastasis. On comparing lymph node group involved in metastatic lesions, it has been seen that cervical lymph nodes are most commonly involved in metastatic lesions. Squamous cell carcinoma is the most common metastatic lesion. In diagnosis of metastatic malignancy, lymph node aspiration is as rewarding as surgical biopsy. Metastatic carcinoma was observed in 14.5% of cases by Patra AK et al[8], 3.8% cases by Ruchi Khajuria and 5.6% cases by Bhaskara et al[2], which is in sharp contrast to our studies showing 20.7% of metastatic carcinoma. This variation in results is due to same reason, that is, difference in age groups of patients (Table IV), as most of metastatic lesions are common above 40 years of age. In Patra's study, majority of patients, 43.68% are in the first decade, while in contrast to 15% in our study. Patra restricted his study up to 60 years of age as compared to our study, which includes 8.79% of cases above 60 years of age. In study done by khajuria[45], patients above 40 years of age constitute 15.70% as compared to 23.62% of cases in our study .This shows significant difference and contribute to this variation. The other reason for higher metastasis is the regional variation, as in this region tobacco farming is more prevalent and hence tobacco chewing, which is one of the major predisposing factor for malignancy especially of aero digestive tract. Benign reactive inguinal lymphadenopathy is the most common etiologies, and inguinal lymphadenopathy is of low suspicion for malignancy. In our study, we received the least amount cases of inguinal lymphadenopathy. Carcinoma of external genital region, the lymphomas and melanoma also involved this group of lymphnode[1]. The anatomical site of involved node along with age and sex may give some indication to the location of primary tumour. For example, axillary lymph nodes commonly harbor the metastatic deposits from the breast, lungs or ovaries in middle-aged females. Carcinoma of the external genital region, the lymphomas and melanoma also involved inguinal group of lymphnode1. The cytomorphological pattern seen in routinely stained smears often give clue to the site of primary tumour. Glandular cells moderately pleomorphic arranged in a gland – in – gland or in cribriform pattern suggest a prostatic carcinoma. Columnar cells with elongated nuclei arranged in pallisades, stringy mucus and necrosis suggests primary in the large bowel, while mucin-containing signet ring cells suggest the stomach as the most likely primary site among several other possibilities. The incidence of squamous cell carcinoma, adenocarcinoma and miscellaneous malignancies are more or less comparable with other studies[1,2,3,4,5]. In the present study, squamous cell carcinoma is the most common metastatic lesion of lymph node, which is comparable to other studies. Miscellaneous malignancies are more common than metastatic adenocarcinoma of lymph node in the present study.

In conclusion, FNAC is a reliable diagnostic tool in evaluation of lymphadenopathy for both screening and follow-up and can be performed as an outpatient's procedure. In our study, the predominant cause of enlarged neck nodes was tuberculous lymphadenitis, followed by reactive lymphadenitis and malignant neoplasm, especially metastatic carcinoma and lymphoma. We concluded from the present study that tuberculous lymphadenitis is the most common problem in patients presenting with lymphadenopathy in our set-up, followed by non-specific lymphadenitis and malignant neoplasms, especially metastatic carcinoma. In addition, FNAC is an easy and reliable procedure.

References

1. Arora B, Beena KR. Utility of FNAC in Lymphadenopathies . J. of Cytology. 16(2) ; 1999: 61-66.
2. Bhaskaran CS, Kumar HG, Sreenivas M. Kamleshwari, R. Rao G, Aruna CA. Fine needle aspiration cytology. Review of 1731 cases. Indian J. Pathol Microbiol. 1990 ; 33 : 387-99.
3. Betsill WL, Hajdu SI. Percutaneous aspiration biopsy of lymph nodes. Am J. Clin Pathol 1980 ; 73 : 471 - 79.
4. Davil L. Kinsley . A study of metastatic carcinoma of the neck. An. Surg. 1957 ; 148 : 366-372.
5. 5. Enzell U., Jakobasson PA, Sigurdson A, Zajicek J. Aspiration biopsy of metastatic carcinoma in Lymph nodes of the neck - a review of 1101 consecutive cases. Acta Otolaryngol. 1971; 72: 138- 47.
6. Gupta AK, Nayar M, Chandra M. Reliability and limitations of fine needle aspiration cytology of lymphadenopathies. Acta Cytol 1991 ; 35 : 777-82.
7. Prasad RR, Narasimhan R, Sankran V, Veliath AJ. Fine needle aspiration cytology in the diagnosis of superficial lymphadenopathy: an analysis of 2418 cases. Diagno Cytol 1993 ; 15 : 382-86.
8. Patra AK, Nanda BK, Mohapatra BVK , Pnada AK. Diagnosis of lymphadenopathy by fine needle aspiration cytology . Indian J. Pathol . Microbiol. 1983; 26 : 272 - 8.
9. Paul PC, Goswami BK, Chakrabarty S, Giri A, Pramanik R. Fine needle aspiration cytology of lymph nodes - An institutional study of 1448 cases over a five year period J Cytology 2004;21:187-90
10. Ruchi khajuria, K.C.Gosswami, K.Singh ,V.K.Dubey .Pattern of Lymphadenopathy on Fine Needle Aspiration Cytology in Jammu. JK Science 2006; Vol.8 : No.3 : 157- 159.
11. Kline TS, Khannan V, Line IK. Lymphadenopathy and aspiration biopsy cytology review of 376 superficial lymph

nodes. Cancer 1984; 54:1076-81

12. Lochan KK, Goyal S, Garg R. Lymphadenopathy in children- role of FNAC.J Cytology 2002;19:183-86

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