



EVALUATION OF LYMPHADENOPATHY USING FINE NEEDLE ASPIRATION CYTOLOGY

Pathology

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ABSTRACT

Introduction- Lymphadenopathy is a relatively common problem in patients of all age groups. It may be caused by a relatively benign condition like reactive hyperplasia to very aggressive malignancy like non Hodgkin lymphoma. We conducted this study to evaluate the causes of lymphadenopathy in different age groups **Materials and methods** - This study was conducted over a period of one year duration (from Jan 2019 to Dec 2019) in the department of Pathology, Nalanda Medical College, Patna. Relevant history was taken and clinical examination was done for every patient. After taking consent Fine needle aspiration cytology (FNAC) was done. Other relevant blood and radiological tests were also done. **Results-** Out of total 650 cases with adequate samples there were 355 (54.6%) males and 295 (45.4%) females with male to female ratio 1.2: 1. Age of patients ranged from 1 year to 88 years. Maximum numbers of patients were in 16-40 years age group (36.6%). The most common site of lymphadenopathy was cervical region affecting 446 (68.6%) patients. Overall benign lesions were the cause of lymphadenopathy in more than 85% of patients whereas malignant lesions were seen in 14.8% of patients. Most common cytological diagnosis of lymphadenopathy was reactive hyperplasia affecting 369 (56.8%) patients. Most common cause of malignant lymphadenopathy was metastatic lesions affecting 60 (9.2%) cases. **Conclusion-** FNAC is the first test for evaluation of lymphadenopathy due to its non-invasive nature and rapid results. It can effectively differentiate benign and malignant lesions.

KEYWORDS

FNAC, lymphadenopathy, benign, malignant

INTRODUCTION

Lymphadenopathy is a relatively common problem affecting patients of all age groups. It is a common cause of OPD visits. It is caused by diverse conditions ranging from relatively benign conditions like reactive hyperplasia to malignant conditions like lymphoproliferative disorders or metastatic deposits. Moreover many patients have chronic lymphadenopathy like tuberculosis which can lead to several complications. So, early diagnosis is important for proper management of the patient. FNAC is a safe, reliable, rapid and inexpensive procedure which is performed on outdoor basis [1].

We conducted this study to find out the different causes of lymphadenopathy in different age groups using FNAC.

MATERIALS AND METHODS

This study was conducted over a period of one year duration (from Jan 2019 to Dec 2019) in the department of Pathology, Nalanda Medical College, Patna. Patients were sent to our department from OPD or IPD of medicine, surgery, ENT and pediatrics departments. FNAC was done for all patients who had palpable superficial lymph node enlargement. Consent was taken before the procedure. History and clinical findings were noted for all patients. Samples for complete blood count (CBC) and peripheral blood smear were also taken to look for cell counts and abnormal cells. Other relevant investigations were done as required eg- chest X- ray, ultrasonography, HIV serology, Mantoux test etc.

Procedure- The local area was prepared using antiseptic solution. A 22 gauge Needle attached to the syringe was used for the procedure. Suction was applied after passing the needle in the lymph node swelling. With the suction held steady, the needle was moved back and forth within the lump. When the specimen appeared at the junction of needle and tip of the syringe, vacuum was created and allowed to return to normal slowly. The Needle was withdrawn gently and immediate pressure was applied to the puncture site with a sterile gauze pad. Syringe was filled with air after removing the needle and sample was expressed onto the slide after reattaching the needle. The staining was done by Papanicolaou stain and May-Grunwald-Giemsa (MGG). For Papanicolaou staining, smears were wet fixed in isopropyl alcohol. For May-Grunwald-Giemsa (MGG) staining, smears were air dried. Acid fast staining was also done where needed.

RESULTS

Total 650 cases were included our study. Age of patients ranged from 1

year to 88 years. There were 355 (54.6%) males and 295 (45.4%) females with male to female ratio 1.2: 1. Patients were divided in four age groups for analysis of results (Table 1). Male patients outnumbered female patients in all age groups except 1-15 year age group. Maximum number of patients were in 16-40 years age group [238 (36.6%)]. Least number of patients were seen in >60 years age group with 14.8% cases. 19.4% cases belonged to 0-15 year age group and 29.3% cases belonged to 41-60 years age group.

The most common site of lymphadenopathy was cervical region affecting 446 (68.6%) patients followed by axillary (20.3%) and inguinal (8.15%) regions (Table 2). Generalized lymphadenopathy was seen in 19 (2.92%) patients.

Maximum number of patients with cervical lymphadenopathy was seen in 16-40 years age group affecting 182 (28%) patients. Axillary and inguinal lymphadenopathy were most frequently observed in 41-60 years age group whereas generalized lymphadenopathy was most frequently seen in >60 years age group.

Benign lesions were more common than malignant lesions in all age groups. Overall benign lesions were the cause of lymphadenopathy in more than 85% of patients whereas malignant lesions were seen in 14.8% of patients (Table 3). Least proportion of malignant lesions was seen in 0-15 years age group whereas maximum proportion of malignant lesions were seen in > 60 years age group patients.

Most common cytological diagnosis of lymphadenopathy was reactive hyperplasia affecting 369 (56.8%) patients with 200 (30.8%) males and 169 (26%) females. Reactive hyperplasia was most frequently observed in 16-40 years age group affecting 165 cases out of 238 cases (69.33%). It affected 62.7% cases in 0-15 years age group (79 out of 126 cases) and 56.84% cases in 41-60 years age group (108 out of 190 cases).

Tuberculosis was the second most common diagnosis on FNAC of lymph nodes in our study affecting 166(25.6%) cases with 85 males and 81 females. Tubercular lymphadenitis was most frequently seen in 0-15 year age group affecting 30.95% cases (39 cases out of 126 patients). Maximum number of patients with tubercular lymphadenitis was seen in 16-40 years age group affecting 62 patients out of 238 patients (26%).

Other benign lesions causing lymphadenopathy were abscess

(affecting 13 or 2% cases) and non-specific lymphadenopathy (affecting 6 or 0.92% cases).

Out of total 96 cases with malignant lesions 57(8.8%) were males and 39(6%) were females. Most common cause of malignant lymphadenopathy was metastatic lesions affecting 60(9.2%) cases. Maximum number of metastatic lesions was seen in >60 years age group affecting 31 cases while 0-15 years age group had not any case with metastatic lymphadenopathy. Second most common cause of malignant lymphadenopathy was non-Hodgkin lymphoma affecting 20(3.1%) cases. It was most commonly seen in >60 years age group.

Third commonest cause of malignant lymphadenopathy was Hodgkin

Table 2- Site of lymphadenopathy in different age groups (percentage)

Sites	0-15 years		16- 40 years		41-60 years		>60 years		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total
Cervical	41	56	102	80	65	50	30	22	238 (36.6%)	208 (32%)	446 (68.6%)
Axillary	8	5	20	18	27	24	18	12	73 (11.23%)	59 (9.08%)	132 (20.3%)
Inguinal	7	6	7	7	15	4	3	4	32 (4.92%)	21 (3.23%)	53 (8.15%)
Generalized	2	1	3	1	4	1	3	4	12 (1.85%)	7 (1.08%)	19 (2.92%)
Total	58	68	132	106	111	79	54	42	355	295	650

Table 3- FNAC diagnosis in different age groups (percentage)

Age groups and sex	0-15 years		16- 40 years		41-60 years		>60 years		Total		
FNAC diagnosis	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total
BENIGN LESIONS											
Reactive hyperplasia	33	46	95	70	62	46	10	7	200(30.8%)	169(26%)	369(56.8%)
Tuberculosis	19	20	30	32	24	19	12	10	85(13.1%)	81(12.5%)	166(25.6%)
Abscess	0	0	3	1	4	0	3	2	10(1.5%)	3(0.46%)	13(2%)
Non- specific lymphadenopathy	1	0	2	0	0	0	0	3	3(0.46%)	3(0.46%)	6(0.92%)
Total benign lesions	53 (8.15%)	66 (10.15%)	130 (20%)	103 (15.85%)	90 (13.85%)	65 (10%)	25 (3.85%)	22 (3.38%)	298 (45.85%)	256 (39.38%)	554(85.2%)
MALIGNANT LESIONS											
Non Hodgkin lymphoma	1	0	1	1	3	1	8	5	13(2%)	7(1.1%)	20(3.1%)
Hodgkin lymphoma	2	1	1	0	1	1	2	2	6(0.9%)	4(0.6%)	10(1.5%)
Leukemic infiltration	2	1	0	0	2	0	1	0	5(0.77%)	1(0.15%)	6(0.92%)
Metastatic lesions	0	0	0	2	15	12	18	13	33(5.1%)	27(4.15%)	60(9.2%)
Total malignant lesions	5 (0.77%)	2(0.3%)	2 (0.3%)	3 (0.46%)	21 (3.2%)	14 (2.15%)	29 (4.46%)	20 (3.1%)	57 (8.8%)	39 (6%)	96(14.8%)
TOTAL	58	68	132	106	111	79	54	42	355	295	650

DISCUSSION

Maximum number of patients was seen in 16- 40 years age group in our study. Similar results were observed by Nikethan et al[1] and Bhavani et al[2] who found maximum number of patients in 21- 40 years age group. Our study had male preponderance with male to female ratio 1.2:1. Several studies had male preponderance eg. Nikethan et al[1] and Malhotra AS et al[3] but female preponderance was observed by Bhavani et al[2] in a study involving only cervical lymphadenopathy. Cervical region was the most common site affected by lymphadenopathy in our study followed by axillary region. Cervical lymphadenopathy was the commonest site of lymphadenopathy in most of the studies[1,3,4].

We observed 85.2% benign lesions and 14.8% malignant lesions causing lymphadenopathy. Wilkinson AR et al[5] found 15.4% malignant lesions in their study which correlates with our finding. Benign lesions were the commonest cause of lymphadenopathy in all of the studies [1,3,4,5]. Reactive hyperplasia was the most common cytological diagnosis of lymphadenopathy in our study involving 56.8% of patients. Reactive hyperplasia was also observed as the commonest cause of lymphadenopathy by Duraiswami R et al[7] but several authors [1,3,4,6] have observed tubercular lymphadenopathy as the commonest cause of lymphadenopathy. The most common malignant cause of lymphadenopathy in our study was metastasis from the malignant lesions. Metastatic lesions were the commonest cause of malignant lymphadenopathy in several studies [1,3,4,6].

CONCLUSION

FNAC of lymph nodes swelling is a simple, rapid and non-invasive

lymphoma affecting 10(1.5%) cases and the least common cause was leukemic infiltration seen in 6(0.92%) cases.

Table 1- Number of patients in different age groups (Percentage)

Age groups Sex	0-15 years	16-40 years	41-60 years	>60 years	Total
Male	58 (8.9%)	132 (20.3%)	111 (17.1%)	54 (8.3%)	355 (54.6%)
Females	68 (10.5%)	106(16.3%)	79(12.2%)	42 (6.5%)	295 (45.4%)
Total	126 (19.4%)	238 (36.6%)	190 (29.3%)	96 (14.8%)	650

procedure which provides diagnostic results rapidly. As most of the lymphadenopathy is benign in nature, FNAC is the first line investigation for most of the cases except where malignancy is strongly suspected or patient is already having malignancy where biopsy may be preferred.

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