

A CLINICOPATHOLOGICAL STUDY OF CERVICAL LYMPHADENOPATHYSanjenbam Shyamchand Singh¹, Sougrakpam Robindro Singh²¹Assistant Professor, Department of Surgery, JNIMS, Imphal, Manipur.²Associate Professor, Department of Surgery, JNIMS, Imphal, Manipur.**ABSTRACT****BACKGROUND**

In our country, cervical lymphadenopathy is a common manifestation where the incidence of tuberculosis and oral cancer is very high. Therefore, the proper and early diagnosis of lymphadenopathy is very important for starting of early and effective treatment.

1. To conduct a clinicopathological study of cervical lymphadenopathy with regard to age, sex, clinical mode of presentation and location of the lymph nodes.
2. To evaluate the accuracy of the Fine Needle Aspiration Cytology (FNAC) and histopathology.

MATERIALS AND METHODS

Fifty patients of both sexes above 15 years of age with cervical lymphadenopathy who attended in Regional Institute of Medical Science Hospital from November 2002 to November 2004 were studied prospectively. However, those patients with acute lymphadenitis who have already recovered after antibiotic treatment and did not require a diagnostic biopsy were excluded from the study. Detailed history taken and clinical examination conducted. The distribution of age, sex, mode of presentation and location of the cervical lymph nodes were recorded and whenever required routine investigations like complete haemogram, urine analysis, chest x-ray, Mantoux test were performed. Fine Needle Aspiration Cytology (FNAC) was carried out according to the method of Franzen and Links (1983) followed by Excision biopsy in all the cases. These investigations were performed either as an outpatient procedure or as an inpatient procedure if already admitted in the ward.

RESULTS

In the present study, 35 cases (70%) were benign lesions and 15 cases (30%) were malignant lesions. Number of males with benign lesion were more. In benign lesion cases, 22 (62.8%) were due to tubercular lymphadenitis and 13 (37.1%) were due to Non-specific Lymphadenitis whereas in malignant lesion cases, 8 (53.33%) were due to adenocarcinoma, 6 were (40%) due to squamous cell carcinoma and 1 case (6.66%) due to Non-Hodgkin's Lymphoma. Benign lesions were more common in the age group of 26–35 years (42.85%) whereas malignant lesions were more common in the age group of 46–55 years (40%). Neck swelling is the commonest presentation. Jugulodigastric group of lymph nodes were commonly involved in both benign and malignant conditions. Majority of the cases were successfully aspirated at first attempt. The results of FNAC were correlated with histology. Histopathology revealed 35 cases to be benign and 15 cases to be malignant while the cytology revealed 30 cases benign (85.5%) and 13 cases malignant (86.6%). Overall accuracy rate in cytology was 86%. The accuracy rates for benign and malignant groups were 85.71% and 86.66% respectively.

CONCLUSION

Fine Needle Aspiration Cytology (FNAC) is a rapid, simple, safe, painless and cost effective procedure for early diagnosis and initiating better treatment of cervical lymphadenopathy without hospitalisation. However, aspiration cytology is not the substitute for histopathological examination but it is one of the weapons to be used to hit the diagnostic target.

KEYWORDS

Fine Needle Aspiration Cytology (FNAC), Cervical Lymphadenopathy, Clinicopathological.

HOW TO CITE THIS ARTICLE: Singh SS, Singh SR. A clinicopathological study of cervical lymphadenopathy. J. Evolution Med. Dent. Sci. 2016;5(86):6389-6394, DOI: 10.14260/jemds/2016/1445

BACKGROUND

Lymph nodes are peripheral lymphoid organs. The lymphadenopathy is a disease condition requiring further investigation with respect to its aetiology and diagnostic procedure. There are approximately 800 lymph nodes in the body. No fewer than 300 of them lie in the neck which are involved in the various pathological conditions.^{1,2}

Financial or Other, Competing Interest: None.

Submission 22-09-2016, Peer Review 13-10-2016,

Acceptance 22-10-2016, Published 26-10-2016.

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DOI: 10.14260/jemds/2016/1445



Cervical lymphadenopathy is defined as cervical lymph nodal tissue measuring more than 1 cm in diameter.³ Cervical lymphadenopathy is the commonest cause of a lump in the neck. It is usually secondary to acute infection. It can be present as an isolated feature or as a part of generalised lymphadenopathy. Disease affecting cervical lymph nodes are of varying severity starting from simple curable infection to difficult incurable malignant disease. The analysis of lymph node enlargement in the neck is not an easy task and the diagnosis of the condition is a problem because most of the diseases resemble each other. Improper diagnosis and treatment may convert a potentially curable disease into an incurable one. A swelling in the neck region can be a diagnostic challenge. The unfortunate patient has to undergo detailed investigative procedure which may be time consuming, traumatic and expensive. For cost effective, less traumatic, and

accurate diagnosis of cervical lymphadenopathy, FNAC has an immense potential as reported in different leading serial publications. FNAC is an easy, minimally invasive, rapid and valuable diagnostic tool for the evaluation of cervical lymphadenopathy.^{4,5}

Aims and Objective

1. To conduct a clinicopathological study of cervical lymphadenopathy with regard to age, sex, clinical mode of presentation and location of the lymph nodes.
2. To evaluate the accuracy of the Fine Needle Aspiration Cytology (FNAC) and histopathology.

MATERIALS AND METHODS

Fifty patients of both sexes above 15 years of age with cervical lymphadenopathy who attended in RIMS Hospital during the period from November 2002 to November 2004 were studied prospectively. Those patients with acute lymphadenitis who have already recovered after antibiotic treatment and did not require a diagnostic biopsy were excluded from the study. Detailed history and clinical examination were taken. The distribution of age, sex and location of the cervical lymphadenopathy were recorded and whenever required routine investigations like complete haemogram, urine analysis, chest x-ray, Mantoux test were performed. Fine Needle Aspiration Cytology (FNAC) was carried out according to the method of Franzen and Links (1983) followed by Excision biopsy in all the cases. These investigations were performed either as an outpatient procedure or as an inpatient procedure if already admitted in the ward.

RESULTS

Fifty patients above 15 years of age have been taken for the study and diagnosis of the cases were proven histopathologically. The results and observations are in co-operated with tables and charts.

In the present study, 35 cases (70%) were benign lesions and 15 cases (30%) were malignant lesions as shown in table I. In benign lesion cases, 22 (62.8%) were due to tubercular lymphadenitis and 13 (37.1%) were due to Non-specific Lymphadenitis whereas in malignant lesion, 8 (53.33%) due to adenocarcinoma, 6 (40%) due to squamous cell carcinoma and 1 case (6.66%) due to Non-Hodgkin's Lymphoma as shown in table II.

Out of 50 cases studied, there were 23 males (65.71%) and 12 females (34.24%) with benign lesions whereas with malignant lesions, there were 9 males (60%) and 6 females (40%) as shown in table III.

It was observed that benign lesions were more common in the age group of 26–35 years (42.85%) which was followed by the age group of 15–25 years (28.57%) whereas malignant lesions were more common in the age group of 46–55 years (40%) as shown in table IV.

The prominent clinical features observed in this study both for benign and malignant lesion patients were neck swelling (100%), fever (42.85% and 26.66%), cough and expectoration (28.57% and 13.33%), nasal problems (17.14% and 6.66%), neck pain (11.42% and 20%), difficulty in swallowing (0% and 20%) and lump with abdominal pain (0% and 13.33%) which were shown in table V.

Enlargement of Jugulodigastric lymph nodes was highest in both benign and malignant conditions with the percentage of 51.42% and 33.33% respectively as shown in table VI.

Bilateral involvement of nodes were found in 7 (14.00%) cases and that of unilateral involvement on right side was 17 (34%) cases and on left side was 26 (52%) cases. It was observed that unilateral involvement nodes were more common with 86.00% (43 cases) as shown in table VII.

During aspiration, majority of the cases were successfully done at first attempt in 40 cases (80%) whereas in 10 cases (20%) second attempt of aspiration was required as shown in table VIII. The nature of aspiration was blood in 4 cases, scanty material in 3 cases whereas in 43 cases aspirate gives some diagnosis.

The results of FNAC were correlated with histology. Histopathology revealed 35 cases (70%) to be benign and 15 cases (30%) to be malignant while the cytology revealed 30 cases were benign (85.71%) and 13 cases were malignant (86.6%) as shown in table IX. Overall accuracy rate in cytology was 86%.

The complications came across during the study by FNAC were minimal in comparison to open biopsy.



Figure 1. Enlarged Cervical Lymph Node (Metastatic Carcinoma)

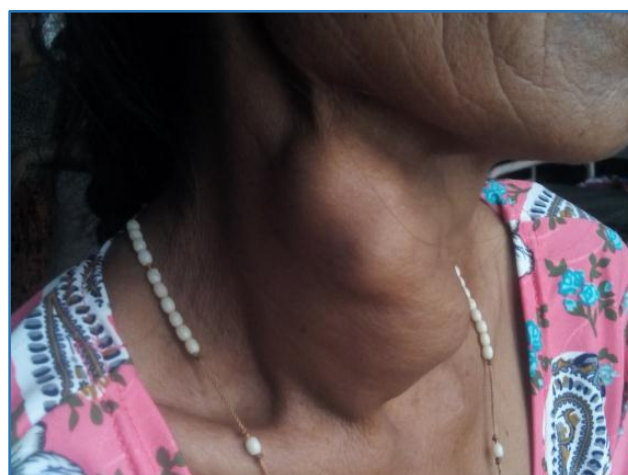


Figure 2. Enlarged Cervical Lymph Node (Metastatic Carcinoma)

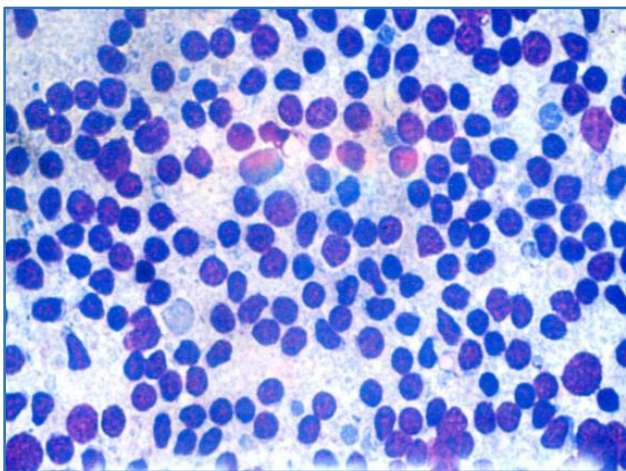


Figure 3. FNAC Smear showing Chronic Nonspecific Lymphadenitis

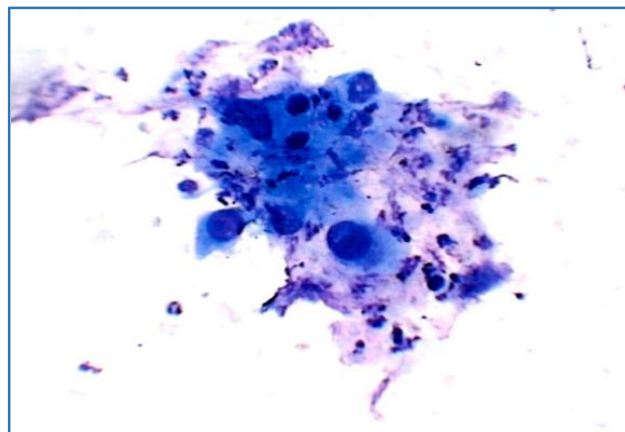


Figure 6. FNAC showing Metastatic Keratinising Squamous Cell Carcinoma

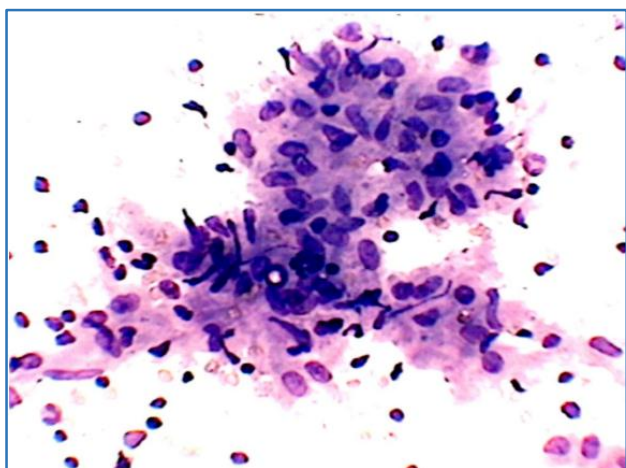


Figure 4. FNAC showing Epithelioid Granuloma (Tuberculosis)

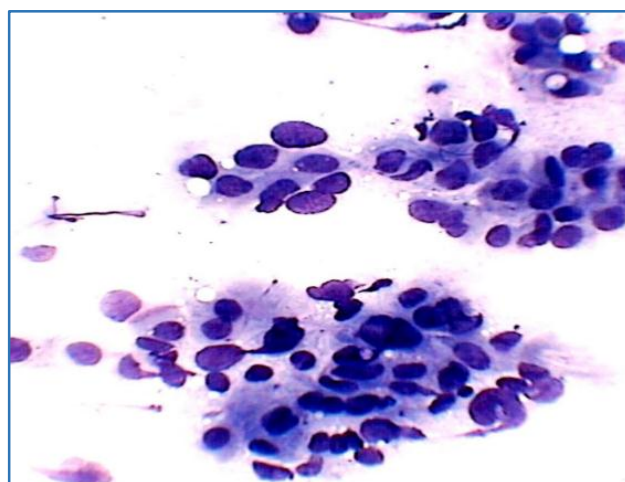


Figure 7. FNAC showing Metastatic Adenocarcinoma

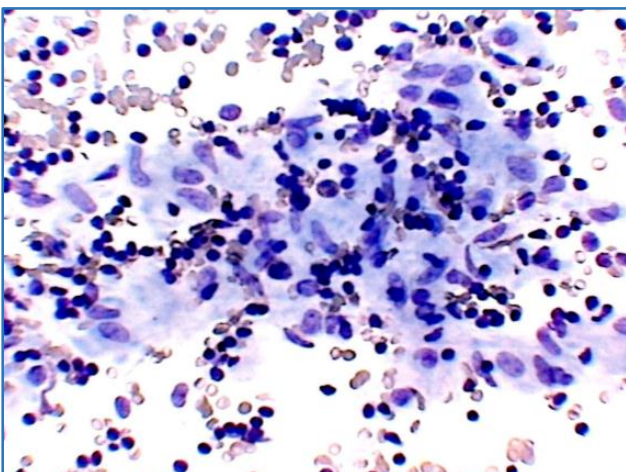


Figure 5. FNAC showing Epithelioid Granuloma (Tuberculosis)

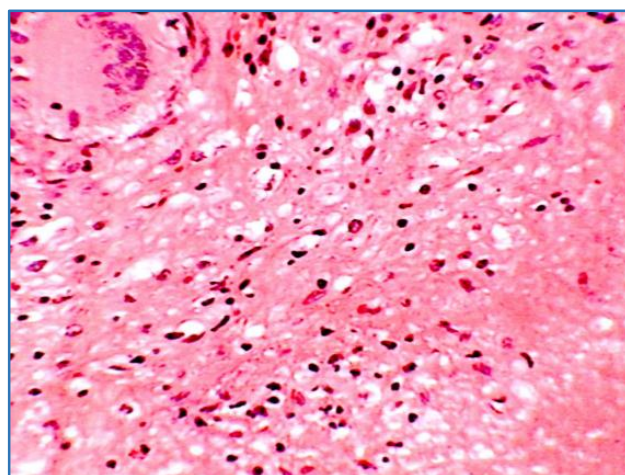


Figure 8. Photomicrograph showing Caseating Tuberculous Lymphadenitis

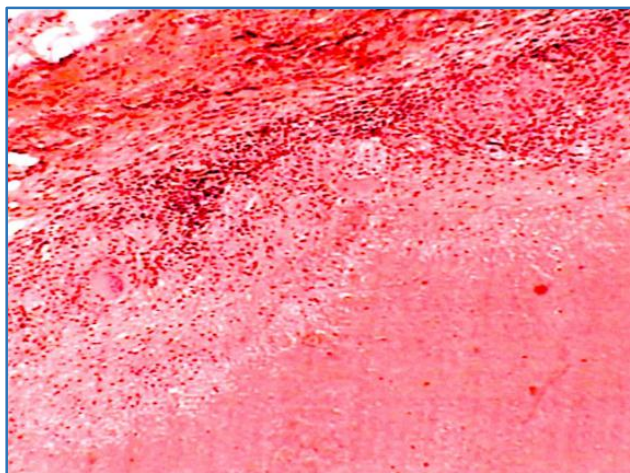
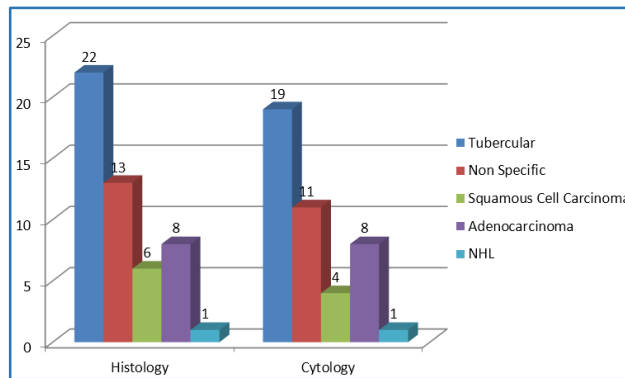
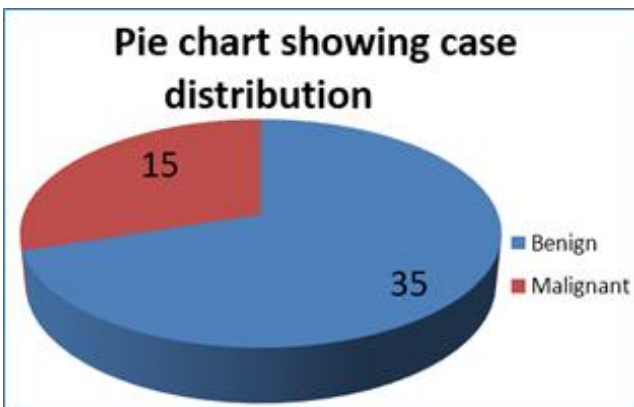


Figure 9. Photomicrograph showing Massive Caseating Tuberculous Lymphadenitis

Group	Type of Lesions	No. of Cases	Percentage
I	Benign	35	70%
II	Malignant	15	30%
	Total	50	100%

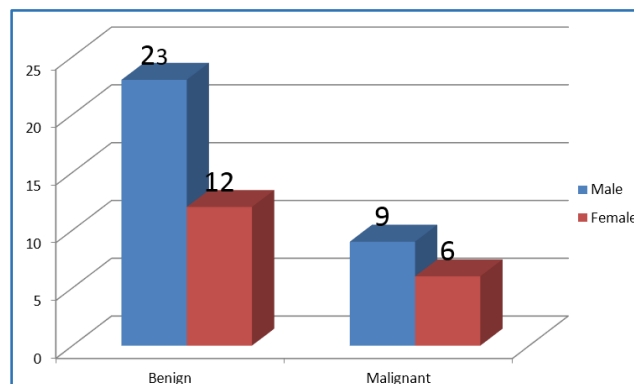
Table I. Distribution of Cases Proven Histopathologically



Bar Chart showing Cytology and Histology Correlation of Lesions

Sex	Benign		Malignant	
	No	%	No	%
Male	23	65.71	9	60
Female	12	34.28	6	40
Total	35	100	15	100

Table III. Sex Distribution



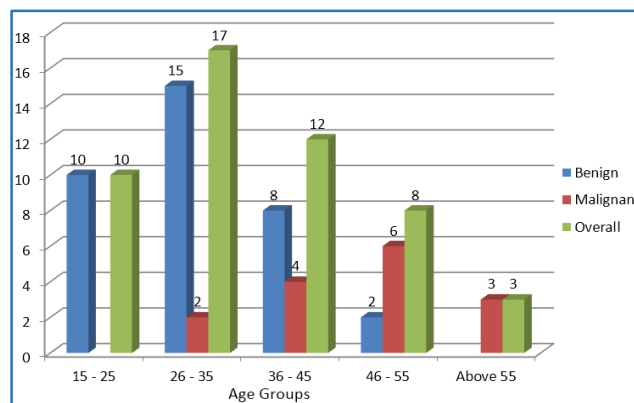
Bar Chart showing Sex Distribution

Age Group In Years	Benign		Malignant		Overall	
	No	%	No	%	No	%
15-25	10	28.57	0	---	10	20
26-35	15	42.85	2	13.33	17	34
36-45	8	22.85	4	26.66	12	24
46-55	2	5.71	6	40	8	16
Above 55	---	---	3	20	3	6
Total	35	100	15	100	50	100

Table IV. Age Distribution

Lesions	Diagnosis	Histology		Cytology	
		No	%	No	%
Benign	Tubercular	22	62.8	19	63.3
	Non-Specific	13	37.1	11	36.6
Malignant	Squamous Cell Carcinoma	6	40	4	30.7
	Adenocarcinoma	8	53.33	8	61.5
	Non-Hodgkin's Lymphoma	1	6.66	1	7.6

Table II. Cytology and Histopathology Correlation of Benign and Malignant Lesions



Bar Chart showing Age Distribution

Clinical Manifestations	Benign		Malignant	
	No	%	No	%
Neck Swelling	35	100	15	100
Pain	4	11.42	3	20
Fever	15	42.85	4	26.66
Cough & Expectoration	10	28.57	2	13.33
Nasal Problem	6	17.14	1	6.66
Difficulty in Swallowing	-	-	3	20
Change of Voice	-	-	-	-
Lump with Pain Abdomen	-	-	2	13.33
Groin Swelling	-	-	-	-

Table V. Clinical Presentation

Location	Benign		Malignant	
	No	%	No	%
Jugulodigastric	18	51.42	5	33.33
Jugulo-omohyoid	4	11.42	1	6.66
Submandibular	5	14.28	2	13.33
Supraclavicular	1	2.85	4	26.66
Combined	7	20.00	3	20
Total	35	100	15	100

Table VI. Location of Palpable Lymph Nodes

Group	Unilateral				Bilateral		Combined	
	Right		Left		No	%	No	%
	No	%	No	%				
Benign	10	28.57	20	57.1	5	14.66	35	70
Malignant	7	46.6	6	40.0	2	13.33	15	30
Total	17	34	26	52	7	14	50	100

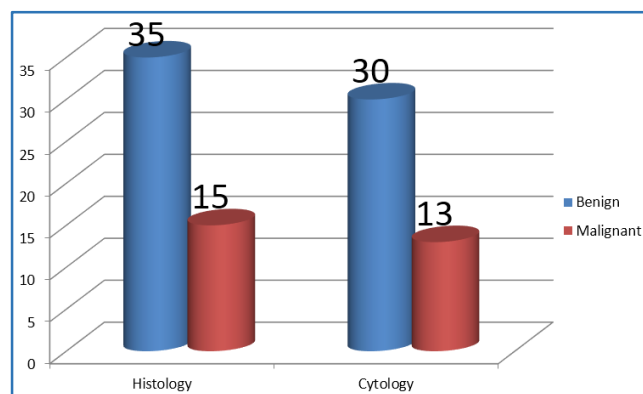
Table VII. Unilateral and Bilateral Enlargement of Lymph Nodes

No. of Attempts	No	%
1 st	40	80
2 nd	10	20
3 rd	0	0

Table VIII. No. of Attempts at Aspiration of Lymph Nodes

Diagnosis	Histology		Cytology	
	No	%	No	%
Benign	35	100	30	85.71
Malignant	15	100	13	86.66
Total	50	100	43	86

Table IX. Comparison of Diagnostic Accuracy of Histology and Cytology



Bar Chart showing Diagnostic Accuracy of Histology and Cytology

DISCUSSION

Cervical lymphadenopathy (Fig. 1 and Fig. 2) is a commonly encountered condition in clinical practice, which needs prompt and accurate diagnosis for a better prognosis. Fine needle aspiration cytology (FNAC) represents a cost effective and rapid technique for the assessment of nodules and masses within the head and neck area.⁶ The well-defined role of FNAC in the investigation of lymphadenopathy has previously been studied.⁷ In the present study, 35 cases (70%) out of 50 cases were benign in nature whereas 15 cases (30%) had malignant pathology. This finding is consistent with the finding of Biswas G et al (2013)⁸ who found an incidence of 71.6% and 28.3% respectively. Among the benign causes of cervical lymphadenopathy, the most common was tuberculosis accounting for 22 cases (62.8%) proven histologically (Fig. 8 and Fig. 9) which may be due to endemicity of disease in India. Moreover, the most common form of extrapulmonary tuberculosis is tubercular lymphadenitis with cervical lymph nodes being most commonly involved group. Cytology could be proven in only 19 cases of tubercular lymphadenopathy (Fig. 4 and Fig. 5). The percentage of cytological accuracy is 86.3% which is similar to that of Bolch M (1967)⁹ 80%, Singh JP et al (1987)¹⁰ 89.77%, Liang R et al (1990)¹¹ 76.9%, Gupta AK et al (1991)¹² 76.78% whereas Anuradha S and Parthasarathy V (1989)¹³ found 100% accuracy. In the study of 1396 cases of FNAC of cervical lymphadenopathy, Ramesh Kumar found the most common benign lesion to be tuberculosis (54%).¹⁴

In our study, 30 cases (85.71%) could be proven cytologically as benign out of the 35 cases of histologically proven benign lymphadenopathy. In the remaining 5 cases, cytology failed to demonstrate due to scanty material during aspiration. In non-specific lymphadenitis, 13 cases were histological proven and 11 cases were cytological proven (Fig. 3). The percentage of accuracy of cytology is 84.6% which is similar to that of Gupta AK et al (1991)¹² 76.9% whereas Anuradha S and Parthasarathy V (1989)¹³ found 100% accuracy. The different in cytological accuracy may due to whether the samples derive mainly from a germinal centre or from the interfollicular or paracortical tissue of the reactive node (Orell SR et al 1999).¹⁵

Out of the 14 cases of histologically proven metastatic carcinoma in present study, cytology could be diagnosed in 12 cases (Fig. 6 and Fig. 7). The percentage is being 85.71%. In 2 cases the cytological diagnosis could not be given due to blood aspirate and cases were proven histologically as squamous cell carcinoma. The accuracy rate is similar to that observed by Bloch M (1967)⁹ 87%, Frable WJ and Frable MAS (1974)¹⁶ 96.8%, Betsill WL and Haldu SI (1980)¹⁷ 89%, Sismanis A et al (1981)¹⁸ 80% whereas Anuradha S and Parthasarathy V (1989)¹³ found 100% accuracy. Overall the diagnostic accuracy in metastatic carcinoma is quite high.

In the present study, one case was diagnosed histologically and cytologically as Non-Hodgkin's Lymphoma. The percentage of cytological diagnosis is 100% which is quite similar to that obtained by Bloch M (1967)⁹ 80% and Anuradha S and Parthasarathy V (1989)¹³ 100%.

Cervical lymphadenopathy is most common in young adults. In our study, benign lesions were more common in the age group of 26-35 years (42.85%) whereas malignant lesions were more common in the age group of 46-55 years (40%).

Male cases were more in number than female. Gupta AK et al (1991)¹² found that tuberculous lymphadenitis was seen more commonly in second and third decades (76.78% and 63.7%). Most common site of cervical lymphadenopathy as observed in the present study was jugulodigastric group of lymph node (46%). Samar G et al¹⁹ observed in their study that tubercular lymphadenitis involved mostly the jugulodigastric group of lymph node (33.3%). Dandapath MC et al²⁰ in their study also revealed that highest tubercular lymph nodes were associated with Jugulodigastric chain.

In our study, unilateral involvement of nodes was more common with 86.00% (43 cases) than bilateral involvement of nodes with 14.00% (7 cases). Baskota DK et al (2004)²¹ observed unilateral and bilateral disease in 83% and 17% cases respectively.

The accuracy rate of aspiration cytology in our study is 86%. Our results are almost in parity with Gertner R et al (1984)²² showing accuracy of 85%, Stevenson DS (1989)²³ found accuracy of 79% whereas Carroll CMA et al (1998)²⁴ found 95% overall accuracy rate of FNAC when compared to the final histology result.

The accuracy in diagnosis of FNAC depends upon many factors like proper selection of the patients, localisation and aspiration of the affected nodes with good staining and experience of the cytologist. The cause of unsatisfactory smear may be due to scanty cellularity, presence of blood in the aspirated material, presence of purulent material and when the aspiration needle misses the exact site of pathology.

CONCLUSION

Commonest cause of cervical lymphadenopathy is tuberculosis followed by non-specific lymphadenopathy and metastatic adenocarcinoma. Diagnosis of cervical lymphadenopathy is a team effort of physician, surgeons and the pathologists. Assessment and predicting its clinical behaviour is not an easy task. Fine Needle Aspiration Cytology (FNAC) is a rapid, simple, safe, painless, cost effective diagnostic modality and can be used as a first line of investigatory tool for establishing the aetiology. Hospitalisation of the patient is not necessary and can be performed as an outpatient department or bedside procedure. Its overall correlation in comparison to histopathological study is very high. However, aspiration cytology is not the substitute for histopathological examination but it is one of the weapons to be used to hit the diagnostic target.

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