

A Clinico-Pathological Study on Cervical Lymphadenopathy

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Abstract

Original Research Article

Background: The analysis of lymph node enlargement in the neck is not an easy task. It is a challenge for surgeon to assess its clinical behaviour and come to a final diagnosis. Those diseases which can be neoplastic also demands correct diagnosis for further management. The study intends to find out systematically the various pathological conditions presenting with enlarged lymph nodes in the neck, also the various modes of clinical presentation and behaviour of these conditions. Relevant investigations have also been studied. **Methods:** The study population consisted of patients above 12 years presenting with cervical lymph node enlargement. The proforma which was drafted is used. Patient was examined systematically giving utmost importance to local examination. After making a clinical diagnosis, further relevant investigations were done to confirm the diagnosis. Treatment was instituted appropriately and patients were followed up. **Results:** Majority of the cases in this study had non-neoplastic causes for cervical lymphadenopathy in which tuberculosis is most common. Male to female ratio of 1.38:1 is noted with most cases between 20 and 40 years. Posterior triangle group of lymph nodes was most commonly affected in tuberculosis. In lymphomas level 2 group of lymph nodes is most commonly involved. Variable results were noted among the groups of lesions, with regard to local characteristics like number, laterality, mobility and involvement of other group of lymph nodes, etc. FNAC by virtue of it being inexpensive, quick in getting the results and easy to perform, is one of the important and essential diagnostic procedures. **Conclusion:** Clinical symptoms in cervical lymphadenopathy is of limited significance because clinical behaviour can be highly variable and mostly non-specific. As cervical lymphadenopathy is an important condition, which always calls for meticulous attention, analysis and treatment. FNAC is found to be a frontline investigation of choice with biopsy and histopathological examination done if further confirmation is required. Most of the non-neoplastic lesions are medically curable with limited role for surgery.

Keywords: neck, diseases, clinical diagnosis, cervical lymphadenopathy.

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BACKGROUND

The analysis of lymph node enlargement in the neck is not an easy task. It is a challenge for surgeon to assess its clinical behaviour and come to a final diagnosis. Those diseases which can be neoplastic also demands correct diagnosis for further management. The study intends to find out systematically the various pathological conditions presenting with enlarged lymph nodes in the neck, also the various modes of clinical presentation and behaviour of these conditions. Relevant investigations have also been studied.

AIMS & OBJECTIVES

1. To study about the various clinical presentations of cervical lymphadenopathy.
2. To correlate pathological findings with the clinical diagnosis.

3. To study the role of FNAC by correlating with confirmed biopsy report.
4. To study the management, outcome and clinical behaviour of cervical lymph nodes on follow up.

MATERIALS AND METHODS

MATERIALS

The clinical material consists of all inpatients and outpatients of Kamineni Institute of Medical Sciences, Narketpally. The material consists of patients during the period of October 2019- September 2021. This study consists of 100 consecutive cases. Diagnosis is made on the basis of histopathological findings.

Inclusion Criteria

1. Patients presenting with cervical lymph node enlargement more than 3 weeks duration.

- Patients more than 12 years of age.

Exclusion Criteria

- Acute cervical lymphadenitis
- Patients less than 12 years of age.
- Patients where FNAC and/or biopsy of node could not be carried out were excluded.

METHODS

In this study the data was taken from Kamineni Institute of Medical Sciences, Narketpally. According to proforma detailed history was taken, thorough examination was carried out and basic relevant investigations were done in all patients to arrive at a provisional diagnosis.

Investigations carried out include

a. Routine Investigations

Blood

Hb%, TLC, DC, ESR
Liver function tests

B. Radiography

a. X-ray neck, b. X-ray chest

C. Imaging

a. Ultrasonography
b. CT scan, Chest and Abdomen

D. Endoscopy

laryngoscopy, bronchoscopy, Esophagoscopy (triple

endoscopy) Indirect laryngoscopy, etc.

E. Skin tests

- Mantoux for tuberculosis

F. FINE NEEDLE ASPIRATION CYTOLOGY (FNAC)

G. EXCISION BIOPSY OF CERVICAL LYMPH NODE

H. SPUTUM FOR AFB

I. Thyroid profile

Investigations like Fine Needle Aspiration Cytology and blood examination were done as a routine. Radiological examination of the chest was done to find primary lesion of lung in suspected cases.

OBSERVATION AND RESULTS

In the present study 100 cases were selected in the surgery outpatient department and inpatient in surgical wards of Kamineni Institute of Medical Sciences, Narketpally. The study includes the patients during the period of October 2019- September 2021.

Table 1: The Number and Percentage of Non-Neoplastic and Neoplastic Lesions

	No. of cases	Percentage
Non-Neoplastic	80	80
Neoplastic	20	20
Total	100	100

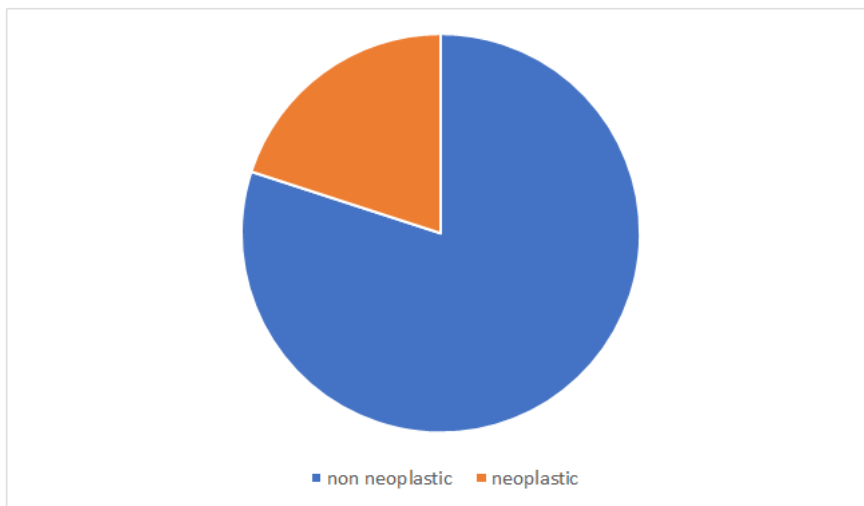


Figure 2: The Number and Percentage of Non-Neoplastic and Neoplastic Lesions

Table 2: Histological diagnosis in 100 cases

Histopathological diagnosis		
Tuberculosis	53	53
Reactive lymphadenopathy	27	27
Secondaries	14	14
Hodgkin's lymphoma	1	1
Non-hodgkin's lymphoma	5	5
Total	100	100

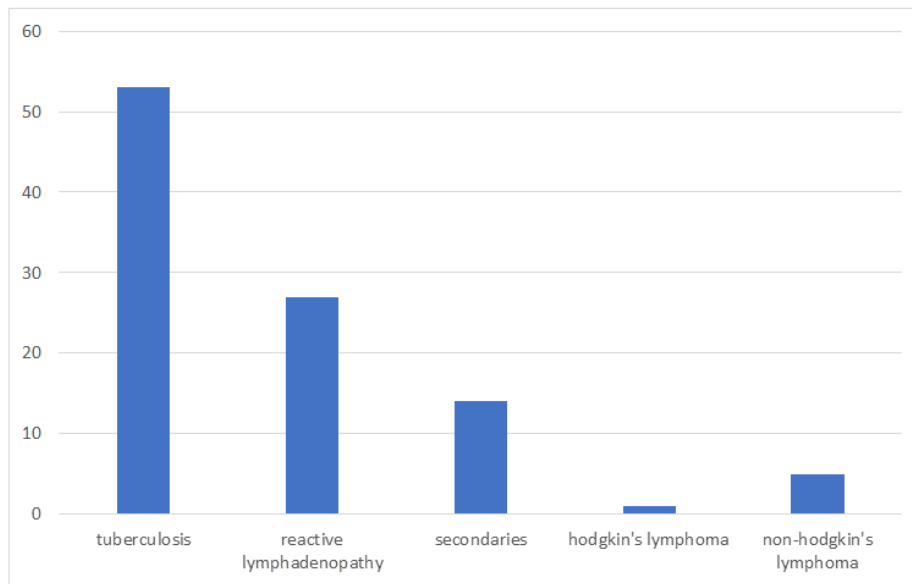


Figure 3: Histological diagnosis in 100 cases

Table 3: Sex Distribution

Sex	No. of cases	Percentage
Male	58	58
Female	42	42
Total	100	100

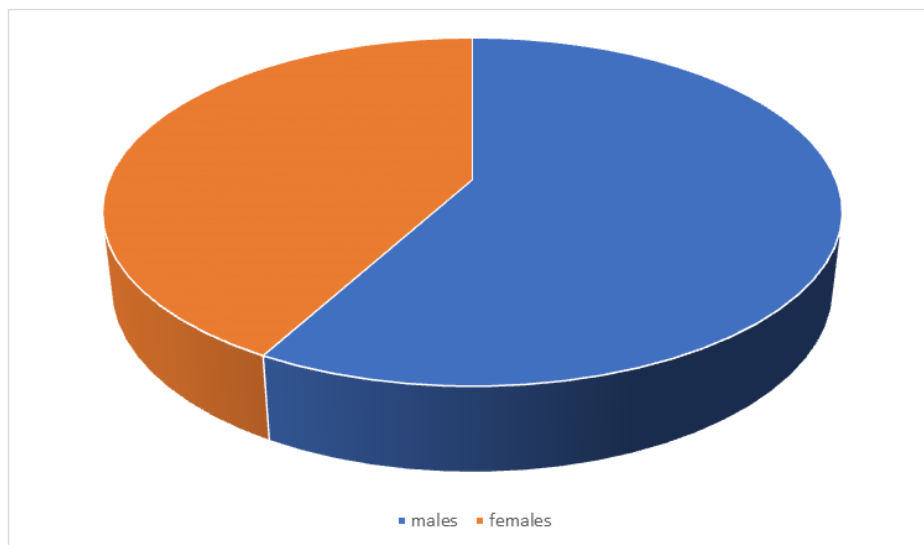


Figure 3: Sex Distribution

Table 4: Age Distribution in Both Sexes

Age group(years)	Male (no.)	%	Female(no.)	%	Total	%
12-20	6	6	8	8	14	14
21-30	19	19	13	13	32	32
31-40	14	14	8	8	22	22
41-50	7	7	6	6	13	13
51-60	7	7	3	3	10	10
>60	5	5	4	4	9	9
Total	58	58	42	42	100	100

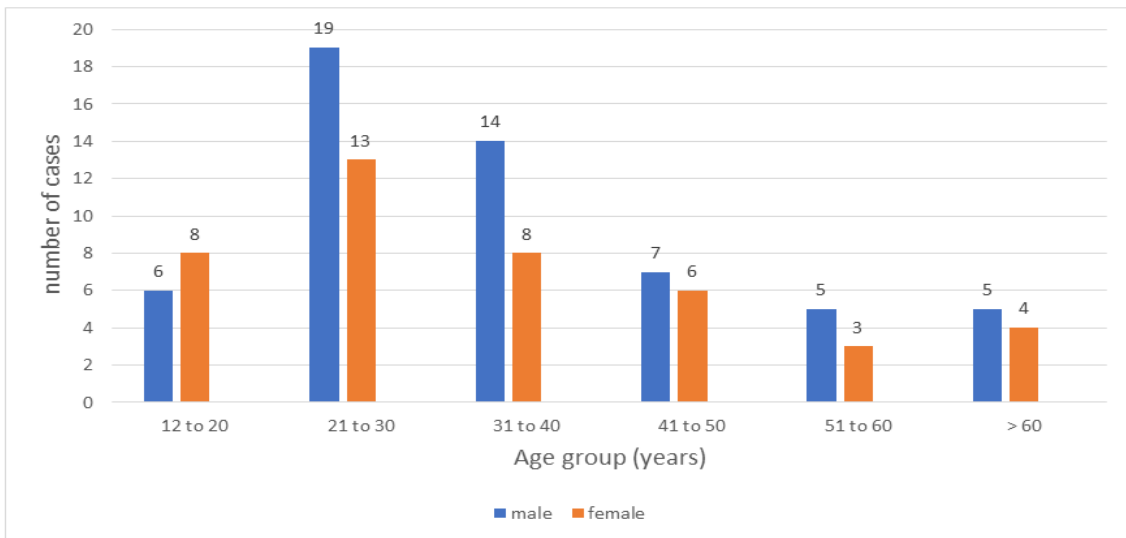


Figure 5: Age Distribution in Both Sexes

Table 5: Incidence of presenting symptoms

Symptoms	No. of cases
Neck swelling	100
Pain	15
Fever	19
Cough	13
Loss of appetite	12
Loss of weight	17
Difficulty in swallowing	2
Change in voice	1

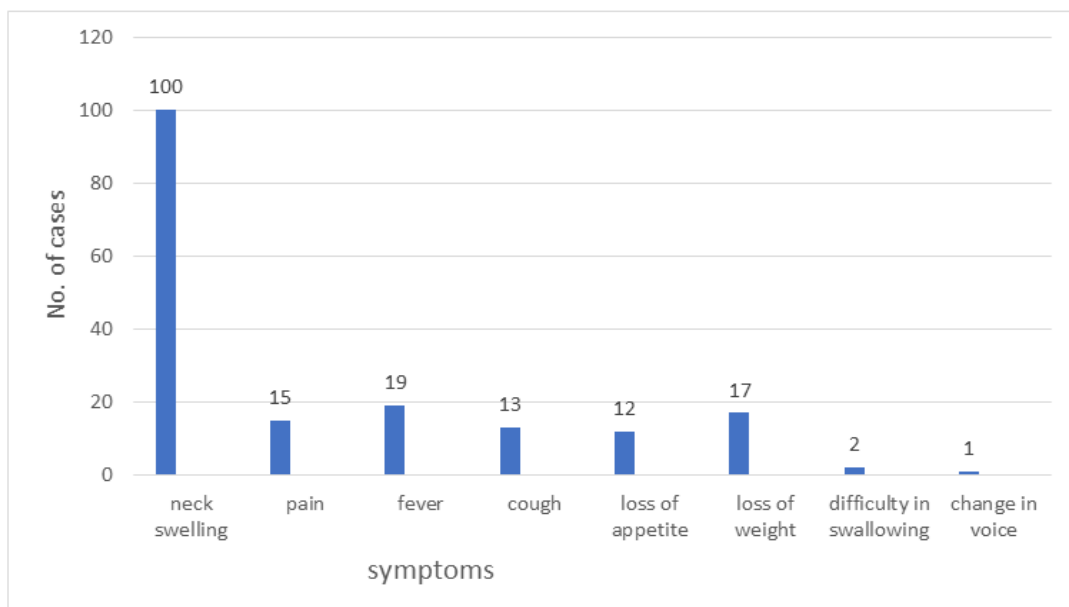


Figure 6: Incidence of presenting symptoms

Table 6: History of contact with tuberculosis in tuberculosis lymphadenitis cases

Contact with tuberculosis	No. of cases	Percentage
Positive	12	22.6
Negative	41	77.4

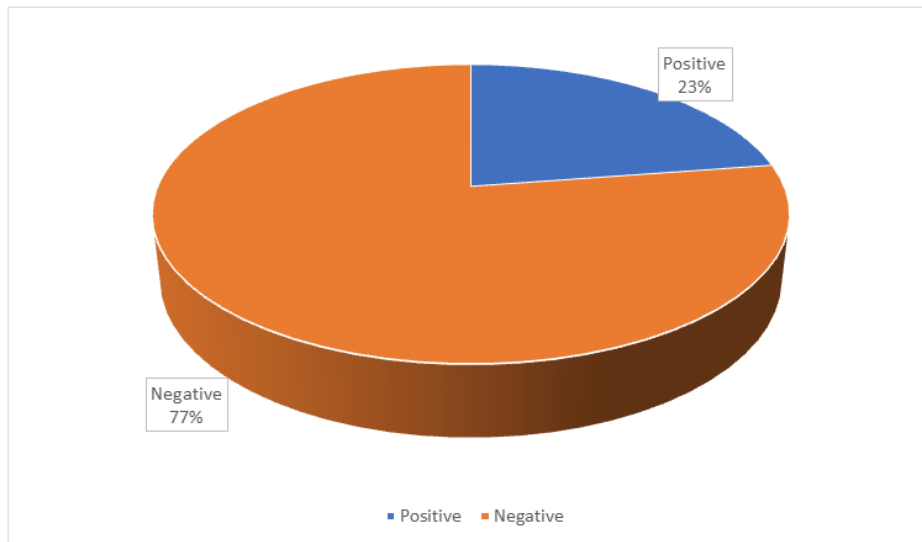


Figure 7: History of contact with tuberculosis in tuberculosis lymphadenitis cases

Table 7: Site distribution of tubercular cervical lymphadenitis, reactive lymphadenitis, lymphomas, secondaries

Site	Tubercular cervical	Reactive lymphadenitis	lymphomas	secondaries	Total
Level I(submental & submandibular)	9	10	0	0	19
Level II(upper jugular group)	14	6	3	7	30
Level III(middle jugular group)	7	1	0	4	12
Level IV(lower jugular group)	5	3	1	1	10
Level V (posterior triangle group)	18	7	2	2	29
Level VI (anterior compartment group)	0	0	0	0	0
Total	53	27	6	14	100

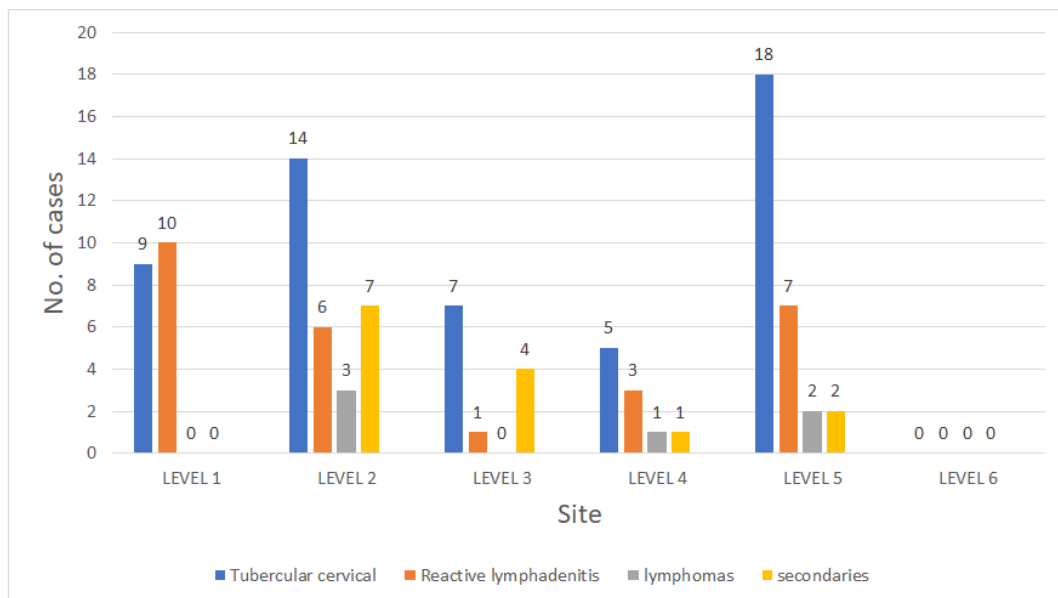


Figure 8: Site distribution of tubercular cervical lymphadenitis, reactive lymphadenitis, lymphomas, secondaries

Table 8: Discrete/Matted presentations of lymph nodes in tubercular cervical lymphadenitis

Presentations	No.of cases	Percentage
Matted	20	37.74
Discrete	33	62.26
Total	53	100

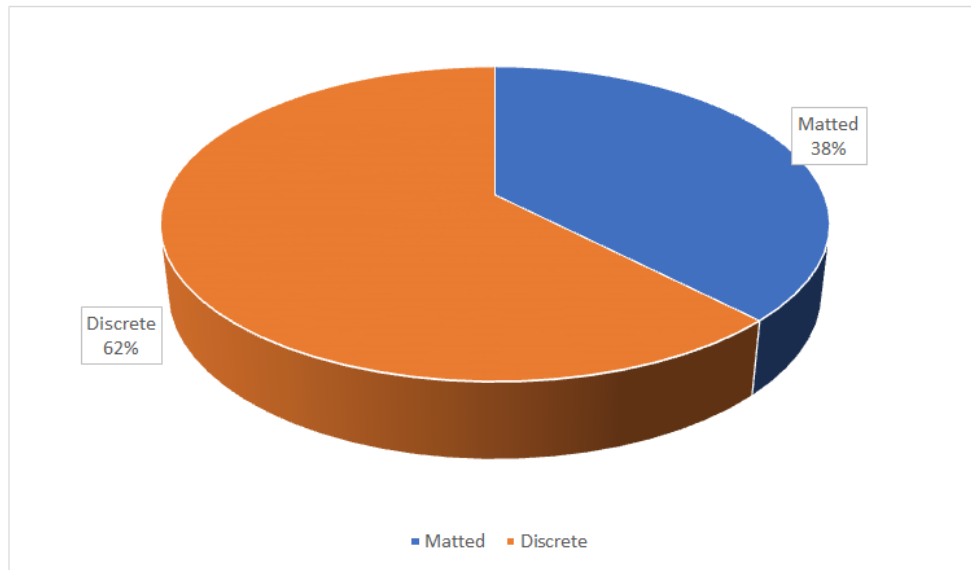


Figure 9: Discrete/Matted presentations of lymph nodes in tubercular cervical lymphadenitis

Table 9: Chest X-ray positivity in tubercular cervical lymphadenitis

Chest xray	No. of cases	Percentage
Positive	5	9.43
Negative	48	90.57
Total	53	100

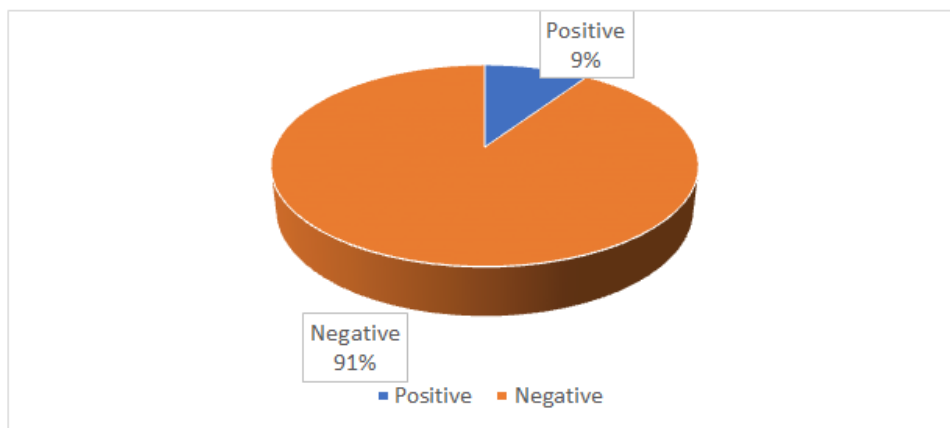


Figure 10: Chest X-ray positivity in tubercular cervical lymphadenitis

Table 10: Involvement of other lymph nodes in cervical lymphadenopathy

Lymph node Group	Tubercular cervical lymphadenitis		Reactive lymph node		Lymphomas	
	No.	%	No.	%	No.	%
Cervical +Inguinal	2	3.7	1	3.7	1	16.7
Cervical +Axillary	2	3.7	4	14.8	0	0
Cervical +Axillary+ Inguinal	0	0	0	0	2	33.3

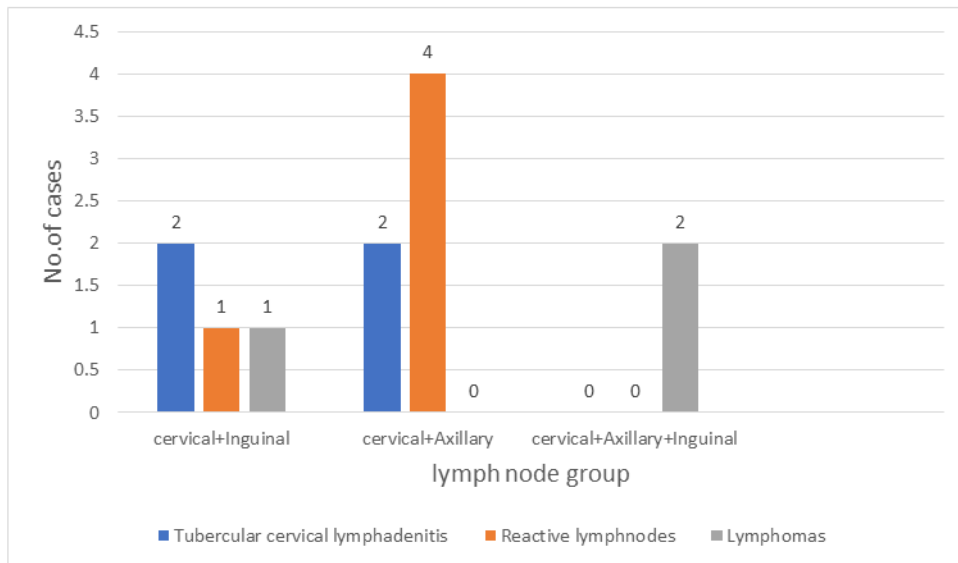
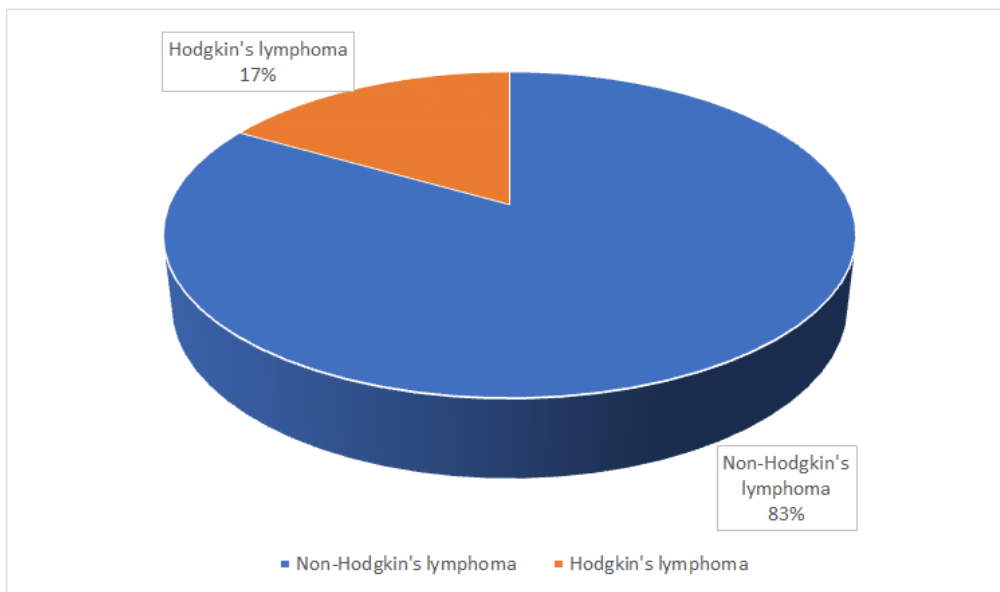


Table 10: Involvement of other lymph nodes in cervical lymphadenopathy

Table 11: Main types of lymphomas

Types of lymphomas	Number of cases	Percentage
Non-Hodgkin's lymphoma	5	83.3
Hodgkin's lymphoma	1	16.7
Total	6	100



Figures 12: Main types of lymphomas

Table 12: Distribution of primary in malignant secondaries in neck

Primary site of malignancy	Histopathological pattern	Number of cases
Esophagus	SCC	4
Larynx	SCC	2
Stomach	Adenocarcinoma	2
Thyroid	Papillary carcinoma	2
Unknown	SCC	3
	Adenocarcinoma	1

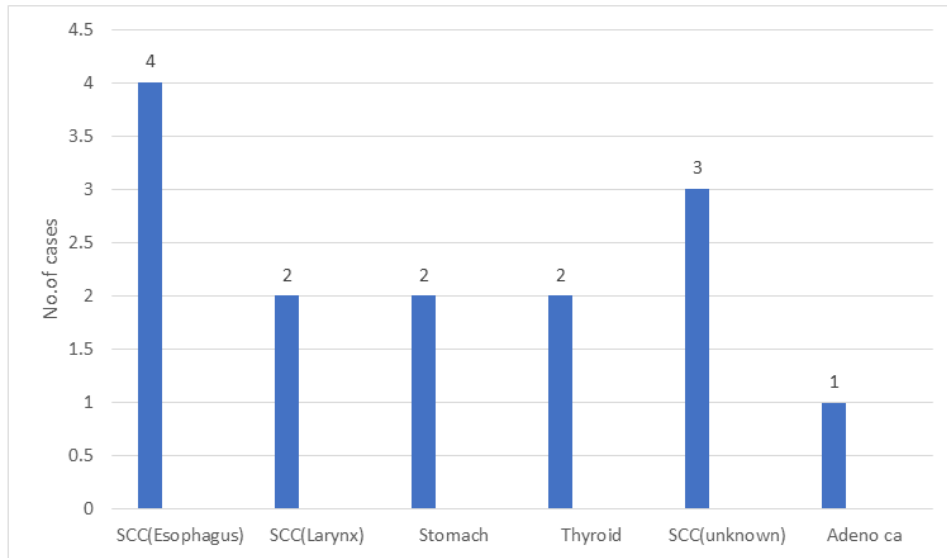


Figure 13: Distribution of primary in malignant secondaries in neck

Table 13: Sensitivity and specificity of FNAC in diagnosing tuberculous cervical lymphadenitis

FNAC	Number of cases
True positive	40
False positive	0
False negative	13
True negative	47
Total	100

Table 14: Sensitivity and specificity of FNAC in diagnosing reactive lymphadenitis

FNAC	Number of cases
True positive	27
False positive	5
False negative	0
True negative	68

Table 15: Sensitivity and specificity of FNAC in diagnosing secondaries in cervical lymph nodes

FNAC	Number of cases
True positive	13
False positive	0
False negative	1
True negative	86
Total	100

Table 16: Sensitivity and specificity of FNAC in diagnosing lymphoma in cervical lymph node

FNAC	Number of cases
True positive	5
False positive	0
False negative	1
True negative	94
Total	100

Table 17: Treatment and outcome

Diagnosis	No. of cases	Treatment	No. of cases	Outcome		
				Recovered	Not followed	Expired
Reactive lymphadenitis	27	Swelling-antibiotics	27	27	0	0
Tubercular cervical lymphadenitis	53	Swelling-ATT	48	46	2	0
		Swelling with cold abscess-I&D	5	5	0	0
Secondaries	14	chemotherapy	0	0	0	0
		Operated	2	2	0	0
		Referred	12	0	11	1
Hodgkin's lymphoma	1	chemotherapy	1	1	0	0
		Referred	0	0	0	0
Non- Hodgkin's lymphoma	5	chemotherapy	4	4	0	0
		Referred	1	0	1	0

DISCUSSION

The discussion is mainly based on analysis and observations made regarding presenting symptoms, clinical behaviour, signs, investigations, management and postoperative events in 100 cases of cervical lymph node enlargement attending to Kamineni Institute of Medical Sciences, Narketpally during the period of October 2019 to September 2021.

In the study made by Shafullah and Syed Humayun Shah *et al.*, 77 the incidence of non-neoplastic and neoplastic lesions were 90.6% and 9.4% respectively.

The observation made by Jha BC *et al.*, 78 who studied 94 cases, of which tuberculosis was confirmed in 63.8% cases.

In the present study, which studies 100 cases of cervical lymphadenopathy, 80 were non-neoplastic lesions and 20 were neoplastic lesions. Tuberculosis accounted for 53% of cases, 27% turned out to be reactive lymphadenitis. Among the neoplastic lesions, malignant secondaries accounted for 14% while non-Hodgkin's lymphoma and Hodgkin's lymphoma accounted for 5% and 1% respectively.

Table 18: Comparison of distribution of different lesions

	Tuberculosis	Reactive lymphadenitis	Secondaries	Non-Hodgkin's lymphoma	Hodgkin's lymphoma
Shafullah <i>et al.</i> ,	69%	17.8%	2.9%	3.4%	3.1%
Jha BC <i>et al.</i> , (2001)	63.8%	9.6%	20.7%		
Present study	53%	27%	14%	5%	1%

Sex distribution in cervical lymphadenopathy

Of the 100 cases, 58 cases were males and 42 females. The sex ratio in the present study was 1.38:1 (M:F).

Table 19: Comparative analysis of sex distribution

Gender	Bedi RS <i>et al.</i> ,	Ammari FF <i>et al.</i> ,	Dworski	Dandapat MC <i>et al.</i> ,	Purohit SD <i>et al.</i> ,	Present study
M:F	01:01.7	1:02	01:01.4	01:01.2	1.4:1	1.22:1

Most of these studies show female predilection. Few studies like Purohit SD *et al.* and Tripathy SN *et al.*, are comparable with the present study.

History of constitutional symptoms

In the present study, 15% of patients presented with pain, 19% with fever, 15% with cough, 12% with loss of appetite, 17% with loss of weight, 2 patients presented with dysphagia and 1 with change in voice.

Site distribution in cervical lymphadenopathy

This study utilised the Memorial Kettering Hospital Classification of neck lymph nodes from Level I to Level VII.

It was observed that in tuberculosis, level V was most commonly affected (33.9%) followed by Level II (26.4%). In contrast, in secondaries Level II group was most commonly involved (50%) and similarly in lymphomas Level II group was involved.

In the Jha BC *et al.*, series, Level II group was most involved in tuberculosis. The result of this study is comparable to the study made by Baskota DK *et al.* study, wherein tuberculosis Level V lymph nodes is most commonly involved.

In this present study, 20 cases (37.7%) showed multiple matted lymph nodes in tuberculous lymphadenopathy. Thirty-three cases (72.3%) showed

single discrete lymph nodes. Jha BC *et al.*, study showed matted lymph nodes in 38.3% of cases which is comparable with the present study.

Chest X-ray positivity was seen in 9.43% of cases of present study. The studies made by Aggarwal P *et al.*, series showed 28.3% positivity and Jha BC *et al.*, series showed 16% positivity.

In the present study, non-Hodgkin's lesion: Hodgkin's lesion ratio is 5:1. While findings by Peh SC and Shamie *et al.*, had a ratio of 9:1. Raymond Alexandrian study had a ratio of 5.02:1, which has similar results as this present study.

Table 20: The sensitivity and specificity of FNAC

Histopathological diagnosis	Sensitivity	Specificity
Tubercular lymphadenitis	75.8%	100%
Reactive lymphadenitis	100%	93.1%
Malignant secondaries	92.8%	100%
Lymphomas	83.3%	100%

The study by Jha BC *et al.*, reported a sensitivity of 92.8% in diagnosing tubercular lymphadenitis. Dandapat MC *et al.*, reported a sensitivity of 83% for tuberculosis. The study by Chao SS, Loh KS *et al.*, showed sensitivity of 88% and specificity of 96% for the same. Similarly Das gupta A *et al.*, reported a sensitivity of 84.4% for tuberculosis and 89% for malignant secondary deposits.

Prasad RR *et al.*, studied 2216 cases and noted sensitivity and specificity of 84% and 95% respectively for tubercular lymphadenitis, 97% and 99% for metastatic deposits, 80% and 98% for Hodgkin's disease. 81% and 96% for non-Hodgkin's lymphoma.

In the present study, FNAC sensitivity for tubercular lymphadenitis is low as compared to above studies.

Treatment

In the treatment of tubercular lymphadenitis similar findings as in present study was obtained from Jha BC *et al.*, where short course chemotherapy was given with no recurrence.

Another study made by Kaulikama M *et al.*, shows that all patients recovered by combination of anti tuberculous therapy and surgical treatment.

The reactive lymphadenitis were adequately managed with antibiotics and local treatment. The malignant secondaries and lymphomas were staged and treated as per accepted protocols and were referred to higher oncologic centres.

For reactive lymphadenitis, tubercular lymphadenitis medical treatment was instituted.

The commonest site of primary in a case of malignant secondary was lungs and pancreas in the studies by Linderman *et al.*, In the present study it was esophagus followed by larynx. In the study by Osama Gaber *et al.*, it was possible to establish primary in 86.7% whereas in the present study it was only 71.5%. In reset of the cases, primary could not be diagnosed because of limited resources of our hospital.

Role of FNAC in cervical lymphadenopathy

In the present study, the sensitivity and specificity of FNAC in detecting various lesions of cervical lymph node are shown in the following table.

For secondaries and lymphoma, which needs radiotherapy, chemotherapy and expert oncologic surgeries, patients were referred to MNJ Cancer Hospital Hyderabad.

For all patients, necessary advice given and were asked to attend the surgical outpatient department for follow-up.

CONCLUSION

One hundred consecutive cases were selected and were studied in the present study. Of the 100 cases, tuberculous lymphadenopathy had the maximum incidence of 53% followed in reactive lymphadenitis (27%), secondaries (14%) and lymphomas (6%).

Overall age at presentation was maximum between 21 years and 30 years followed by 31-40 years.

In investigations, Fine Needle Aspiration Cytology was found to be accurate with 75.5% for the diagnosis of tuberculosis. Few patients were diagnosed as non-specific lymphadenopathy which were later confirmed by biopsy to have either tuberculosis or reactive lymphadenitis.

In metastatic lymph node, method of diagnosis was Fine Needle Aspiration Cytology and two patients were treated with surgery. One patient expired before referral. Rest 11 cases were referred to oncologic centre and they did not come for follow-up.

Lymphomas were diagnosed by Fine Needle Aspiration Cytology and confirmed with excision biopsy.

Hodgkin's lymphoma was treated with chemotherapy and was followed up regularly till the study concluded. No mortality noted.

Among 5 non-Hodgkin's lymphoma cases, 4 cases were treated with chemotherapy and they were followed up regularly till the study concluded. No mortality noted during the study. 1 case got referred to oncology centre.

In this present study, fine needle aspiration cytology was found to be reliable and cheapest method of diagnosis without any significant morbidity and with good patient compliance.

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