A CLINICO PATHOLOGICAL STUDY OF CERVICAL LYMPHADENOPATHY

Shaik Ahmed Sheriff[1], P. Adeppa[2]

[1]Assistant Professor, Department of General Surgery, S.V. Medical College, Tirupathi.
[2]Associate Professor, Department of General Surgery, S.V. Medical College, Tirupathi.

ABSTRACT

BACKGROUND

Cervical lymphadenopathy is a common finding in day today surgical practice which poses a challenge to the clinician because clinical findings may not always help in arriving at a possible cause. Meticulous history taking and thorough clinical examination most of the times helps the clinician in diagnosis but for confirmation and planning management histological examination always helps. Fine Needle Aspiration Cytology is emerging as a first line diagnostic tool in evaluating lymphadenopathy. The aim of this study was to identify various causes of cervical lymphadenopathy and to identify the distribution in various age groups and to compare clinical findings with pathological findings. This is a prospective study on Cervical Lymphadenopathy conducted on 130 patients in Department of General Surgery at Sri Venkateswara Ramnarain Ruia Government General Hospital, Tirupati from September 2015 to October 2016.

MATERIALS AND METHODS

This was a prospective study conducted in department of general surgery in Sri Venkateswara Ramnarain Ruia Government General Hospital, Tirupati from September 2015 to October 2016. A total of 130 patients were included in the study. Detailed history was taken and clinical examination was done, required investigations were done, Fine Needle Aspiration Cytology was done in all the cases. Results were analysed.

RESULTS

Tuberculosis was the most common cause (42%) followed by non-specific lymphadenitis (25%). Women were more affected than men. Young adults in 18-30 years age group were more affected by TB whereas patients in age group 51-60 were affected with malignancy. Fine Needle Aspiration Cytology was conclusive in 125 cases.

CONCLUSION

Tuberculosis is the most common cause followed by non-specific lymphadenitis, metastatic lymph nodes. Fine Needle Aspiration Cytology is simple, quick and cheap investigative tool in cervical lymphadenitis evaluation.

KEYWORDS

Cervical Lymphadenopathy, Fine Needle Aspiration Cytology, Tuberculosis.

HOW TO CITE THIS ARTICLE: Sheriff SA, Adeppa P. A clinico pathological study of cervical lymphadenopathy. J. Evid. Based Med. Healthc. 2017; 4(87), 5070-5077. DOI: 10.18410/jebmh/2017/1014

BACKGROUND

Cervical lymph node enlargement is encountered more often in out-patient and inpatient Departments of General surgery. While meticulous history taking and detailed examination will help in arriving at a diagnosis, definitive diagnosis, prognosis and plan of management needs the aid of FNAC and / biopsy. Sometimes occult head and neck carcinomas present only as enlarged neck nodes where the primary may be suggested by pathological examination. This helps in planning management.

Of many causes for cervical lymphadenitis, tuberculosis is still a common cause. Even though the problem is practically eradicated in Western countries, it is still prevalent in India. The present perspective is undertaken to obtain data regarding various aetiologies of cervical lymphadenopathy in this region, with particular emphasis on clinical and pathological features.

Cervical lymphadenopathy is one of the common and important presentations of the underlying pathology of head and neck and sometimes, of distant organs, which pose a large number of differential diagnoses like Neoplasms (primary or secondary), Infectious (specific and non-specific) and Immune deficiency disorders and also the rare disorders like inflammatory pseudo tumour (plasma cell granuloma) and Kikuchi-Fujimoto disease. Hence for proper and effective treatment of the underlying pathology it requires a definitive clinico-pathological correlation. Computerized Tomographic scan of neck, Magnetic Resonance Imaging, Ultra sound may help in diagnosis but clinical suspicion and tissue diagnosis by fine needle aspiration or biopsy guides for effective management.

Financial or Other, Competing Interest: None.
Submission 26-09-2017, Peer Review 29-09-2017,
Acceptance 12-10-2017, Published 27-10-2017.
Corresponding Author:
Dr. Shaik Ahmed Sheriff,
No. 18-1-281/1. SAM Apartment,
KT, Road, Bhavani Nagar, Tirupathi.
E-mail: drasmahmed@gmail.com
DOI: 10.18410/jebmh/2017/1014

Aims and Objectives

1. To know various aetiologies of cervical lymphadenopathy in age group 18-80 Years.
2. To know the diagnosis of the underlying pathological variants and to correlate with clinical findings.

MATERIALS AND METHODS

This is a prospective study on Cervical Lymphadenopathy conducted on 130 patients in Department of General Surgery at Sri Venkateswara Ramnarain Ruia Government General Hospital, Tirupati from September 2015 to October 2016.

Inclusion Criteria

1. Patient giving written informed consent.
2. Patient age above 18 years and below 80 years.
3. Patients presenting with cervical lymph nodes enlargement alone or along with involvement of other lymph node regions.

All patients are included after taking informed and written consent. Detailed history including age, sex, complaints, duration of illness, associated constitutional manifestations like fever, loss of weight, pulmonary symptoms, characteristics of the nodes and symptoms of other involved systems is taken. Clinical examination of the patients is done in the systematic manner and according to the proforma.

Laboratory investigations done including blood counts, Erythrocyte Sedimentation Rate, ultra sound examination of neck and abdomen, chest x-ray in most of cases to exclude mediastinal node involvement and associated pulmonary lesions. All cases are subjected to F.N.A.C. The nodes are carefully chosen to avoid diagnostic failures. In case of suspicion F.N.A.C. repeated. Excision Biopsy is done when F.N.A.C is inconclusive. The clinical data analysed in relation to F.N.A.C

The clinical and pathological diagnoses are analysed, results compared with other series and conclusions drawn.

RESULTS

A total of 130 cases of cervical lymphadenopathy are included in the present study and the results are as follows: Out of 130 cases, Non neoplastic conditions like T.B lymphadenitis, Reactive hyperplasia, Non -specific lymphadenitis are 102 cases and neoplastic conditions like metastatic lymph nodes, Hodgkin's lymphoma, Non-Hodgkin's lymphoma are 28 cases.

Age	Non-Neoplastic conditions						Total	%
	T.B Lymphadenitis		Reactive Hyperplasia		Non-Specific Lymphadenitis			
	Male	Female	Male	Female	Male	Female		
18-30	11	24	1	5	7	9	57	48.00
31-40	5	6	1	5	1	5	23	22.00
41-50	1	4	1	5	4	2	13	12.74
51-60	3	1	1	1	2	0	7	06.86
61-70	0	0	0	0	1	0	1	00.98
71-80	0	0	0	0	0	1	1	00.98
Total	**20**	**35**	**4**	**11**	**15**	**17**	**102**	**100**

Table 1. Age and Sex Distribution among Non-Neoplastic Lesions

Among non-neoplastic conditions, age group of 18-30 is more commonly affected followed by 31-40 years age group. Male to female ratio is 39: 63 = 1: 1.91.

Age	Neo Plastic Conditions						Total	%
	Hodgkin's Lymphoma		Non-Hodgkin's Lymphoma		Metastatic Lymph nodes			
	Male	Female	Male	Female	Male	Female		
18-30	0	2	0	0	2	1	5	17.85
31-40	0	0	0	0	0	3	3	10.71
41-50	1	0	1	0	0	3	5	17.85
51-60	0	0	0	0	8	4	12	42.85
61-70	0	0	0	0	0	2	2	7.14
71-80	0	0	0	0	0	1	1	3.57
Total	**1**	**2**	**1**	**0**	**10**	**14**	**28**	**100**

Table 2. Age and Sex Distribution among Neoplastic Lesions

Among neoplasms 51-60 age group has higher incidence followed by 41-50 and 18-30. Metastatic lymph nodes are most common neoplastic cause than Lymphomas in the age group 18-80 years. Female to male ratio- 1. 3: 1.

Age	T.B. Lymphadenitis	Reactive/Non-specific Lymphadenitis	Neo plastic
18-30	35	22	5
31-40	11	12	3
41-50	5	7	5
51-60	4	4	12
61-70	0	1	2
71-80	0	1	1
Total	**55**	**47**	**28**

Table 3. Distribution among Various Age Groups

In 18-30 years age group, nonmalignant cause is most common whereas malignancy is the most common cause of cervical lymphadenopathy in 51-60 years age group.

Sex	Non-neoplastic	Neoplastic	Total	Percentage
Male	39	12	51	39.24
Female	63	16	79	60.76
Total	**102**	**28**	**130**	**100**

Table 4. Sex Distribution

Duration	<2W	6
	2W - 2 M	23
	>2 M	26
Fever History	Yes	23
	No	32
T.B. History	Yes	29
	No	26
Node Status	Discrete	23
	Matted	32

Table 5. Tuberculous Lymphadenitis

Most of the tuberculous lymphadenitis cases (49 out of 55) presented with complaints of more than 2 weeks duration. Only 23 patients had fever. History of tuberculosis in the past and / or contact with tuberculosis is present in 29 patients and absent in 26 patients. Nodes are matted in 32 patients whereas discrete in 23 patients.

Side	Unilateral		21
		1	18
	Bilateral		16
No. of groups involved			40
		2	9
		>2	6
Consistency		Soft	14
		Firm	41

Table 6. Tuberculous Lymphadenitis- Examination Findings

Unilateral involvement is most common (n=39) and right side (n=21) is most common than left (n=18). Bilateral involvement is noted in 16 patients. Single lymph node group is involved in 40 patients. More than two groups are involved in 6 patients. Consistency of nodes is firm in 41 patients.

E.S.R	<20 mm / first hr	19
	>20 mm / first hr	36
Mantoux Test	Positive	40
	Negative	15
CXR	Positive	17
	Negative	38

Table 7. Tuberculous Lymphadenitis- Investigations.

E.S.R is elevated more than 20 mm in Ist hour in 36 patients.

Mantoux test is positive in 40 patients.

Co-existing active pulmonary tuberculosis is noted in 17 patients.

	Male	Female	Total
Hodgkin's lymphoma	1	2	3
Non-Hodgkin's lymphoma	1	0	1
Metastatic lymph nodes	10	14	24
Total	**12**	**16**	**28**

Table 8. Distribution of sex in various malignant etiologies.

In malignant lymph nodes, metastatic lymph nodes (n=24) are most common.

Female preponderance (n=16) is observed. Male to female ratio 0.75:1

Primary site	Origin	Site	Number of Cases	Percentage	
Known	Squamous cell origin	Lip	1	4.16	50
		Cheek	6	25	
		Tongue	2	8.33	
		Nasopharynx	1	4.16	
		Larynx	1	4.16	
		Lung	1	4.16	
	Non-squamous cell origin	Thyroid	4	16.66	33.32
		Breast	2	8.33	
		Stomach	2	8.33	
Occult			4	16.66	16.66

Table 9. Distribution of Primary site in Cases of Metastatic Lymph Nodes in Neck

In metastatic nodes, primary cause was known in 88% (20 pts.) and occult in 16.66%. Squamous cell origin 50% with primary site in oral cavity is most common.

DISCUSSION

Cervical lymphadenopathy is defined as cervical lymph nodal tissue measuring more than 1 cm in diameter.[1] It is a frequent finding amongst people of all age groups. Significant anxiety surrounds the finding of cervical lymphadenopathy amongst both the patient as well as the attending clinician due to the concern regarding the underlying pathology.

Numerous studies have been undertaken on cervical lymphadenopathy. Cervical lymph nodes are the most frequently enlarged and biopsied nodes of all the peripheral lymph nodes.[2] Most cases can be diagnosed on the basis of a careful history and clinical examination. The causes include infective, haematological, neoplastic and connective tissue disorders.[3]

Etiology- In the present study done, cervical lymphadenopathy is of non-neoplastic nature in 78.5% (n=102) cases and of neoplastic type in 21.5% (n=28). This finding is consistent with the findings of Biswas G et al (2013).[4] who found an incidence of 71.6% and 28.3% respectively. Among non-neoplastic etiologies tuberculosis is the predominant cause of cervical lymph node enlargement with various pathological types like granulomatous, caseating, necrotising, cold abscess.

Neoplastic lymph node enlargements are mostly due to metastasis and primary lymph node malignancy like Hodgkin's and Non-Hodgkin's is comparatively rare in the present study which included adult subjects presented to surgical wards.

Age and Sex Distribution- The Observed male to female ratio is 1:1.54. This is not in accordance with the observations of Pandav et al (2012).[5] and Adhikari et al (2011).[6] who have reported a male preponderance with a Male: Female ratio of 1.07:1 and 1.2:1 respectively.

	Pandav et al	Adhikari et al	Present Study
Male	1.07	1.2	1
Female	1	1	1.54

Table 10. Sex Distribution Comparison

Cervical lymphadenopathy is most commonly seen in the 3rd decade with an incidence of 48%. This is in accordance with the findings of other researchers like Dukare et al (2014).[7] who reported maximum incidence (23.34%) in 3rd decade followed by 4th decade (15.49%) and Pandav et al (2012). who have reported a maximum incidence in 3rd decade (21%).

Tuberculous Cervical Lymphadenitis- The most common sites of extra pulmonary tuberculosis consist of lymphatic, genitourinary, bone and joint, and central nervous system involvement, followed by peritoneal and other abdominal organ involvement.[8]

TB lymphadenitis in the cervical region is known as scrofula, a term derived from the Latin for "glandular swelling." The disease was known as the "King's Evil" in the Middle Ages because of the widespread belief that it could be cured when the affected individual was touched by royalty.

Tuberculous lymphadenitis is considered to be the local manifestation of the systemic disease, whereas lymphadenitis due to nontuberculous mycobacteria is truly a localized disease

In the present study, Tuberculosis is identified as the most common cause of cervical lymphadenopathy (42% cases), followed by non-specific lymphadenopathy (25% cases). Similarly, Vedi et al (2012)[9] reported Tuberculosis as the most common cause (50% cases) followed by reactive hyperplasia (30% cases).

Age and Sex Distribution- Tuberculous lymphadenitis is more common in females and in the younger age groups with a peak age of onset in 20 to 40 years age group.[10] in contrast to pulmonary tuberculosis which is more common in males and in the older age group.[11]

In the present study, TB lymphadenitis is found to be more commonly affecting age group 18-30 years (n=35) 63%. Female preponderance is found with male to female ratio 1:1.75.

Clinical Presentation- TB lymphadenitis usually presents as slow growing neck swelling which are otherwise asymptomatic. Some may have associated constitutional symptoms like fever, night sweats, loss of weight. These symptoms are more commonly seen in HIV positive patients.

In the present study, TB lymphadenitis presented with swellings of more than 2 weeks duration (49 of 55) and 26 among them had swellings for more than 2 months duration. History of low grade fever is present in 23 patients (41%), history of pulmonary TB / contact with open case of TB is present in 29 patients (52%).

Pathogenesis- Tuberculous lymphadenitis is generally thought to be a local manifestation of a systemic disease.[12] But it has been a topic of debate whether it is local disease or a part of systemic disease because the pathogenesis of peripheral TB is poorly understood.

M. tuberculosis, usually enters the human body via the respiratory tract and undergoes lymphohematogenous dissemination. Following primary infection, Ghon's focus forms in lung whose lymphatics drain the bacilli engulfed by macrophages to the hilar and mediastinal lymph nodes and this forms the primary complex.[13] Yew et al.[14] suggested that the predominant pathway of spread of the tubercle bacilli to the cervical lymph nodes is from lung parenchyma as the lymphatics of the right lung and the lower lobe of the left lung normally drain to the right supraclavicular lymph nodes and then upwards to the right lower cervical chain. Hence unilateral involvement, moreover right side is more common in TB cervical Lymphadenitis. The pathogenesis of TB lymphadenitis cannot be totally explained by parenchymal lung diseases, and alternate routes of spread to lymph nodes, such as the tonsils and adenoids, Other members of Waldeyer's ring, have been proposed and occasionally carious teeth, middle ear and mastoid, could also affect the regional lymph nodes.

In the present study, Unilateral involvement (71%) is more commonly noted than bilateral involvement (29%). It is also seen that right side (38.5%) is more commonly affected that the left side (32.5%). Similar results have been highlighted by other researchers. Vedi et al (2012) reported unilateral (right side- 42.85% and left side – 35.71%) and bilateral involvement in 78.56% and 21.44% cases. Baskota et al (2004).[15] observed unilateral and bilateral disease in 83% and 17% cases respectively.

Side Involved	Vedi et al	Baskota et al	Present Study
Unilateral	78.56 %	83 %	71%
Bilateral	21.44 %	17 %	29 %

Table 11. Comparing Involvement of Side

	Vedi et al	Present study
Right	42.85	38.5
Left	35.71	32.5
Bilateral	21.44	29

Table 12. Comparing Involvement of Side

Most common site of cervical lymphadenopathy as observed in the present study is level V (51.5%), followed by level III (25%) and level II (20%). In cases of tubercular lymphadenitis, the most common site affected is posterior triangle, which is in accordance with the results of Ismail and Muhammad (2013).[16] 50%, Maharjan et al (2009).[17] 42% and Baskota et al (2004).51%.

It is observed that the disease process involved a single group of lymph nodes in 63% patients, 2 groups in 23% and more than 2 groups in 14% patients. This finding is in accordance with the study of Ismail and Muhammad (2013). who observed that a single group of lymph nodes was involved in 60% of patients, 2 groups in 27.3% and more than 2 groups in 12.7% of patients. The observed results are also consistent with the findings of Baskota et al (2004). who found that a single group of lymph nodes was involved in 58% of patients, 2 groups in 29% and >2 groups in 13% of patients.

No. of Lymph Node Groups Involved	Ismail and Muhammad (2013)	Baskota et al (2004)	Present Study
Single group	60%	58%	63%
Two groups	27.3%	29%	23%
More than Two groups	12.7%	13%	14%

Table 13. Comparing Number of Groups Involved

Consistency- Initially, the nodes are discrete. Periadenitis results in matting and fixation of the lymph nodes and may break down due to formation of caseous pus. This may perforate the deep fascia and present as a collar-stud abscess. Overlying skin becomes indurated and may result in sinus formation. When healing occurs, it is associated with calcification and scarring.

It is observed that nodes are matted in 32 cases (58.18%) and discrete in 23 cases (41.81%).

This finding is consistent with the observation of Ismail and Muhammad (2013). and Sharma et al (1993). who reported matted lymph nodes in 67.8% and 72% cases respectively.

It is observed that the consistency of involved nodes is soft in 17.6% cases which is mainly benign, firm in 61% cases. This finding is in accordance with the results of Vedi et al (2012).who found soft nodes in 18.5% cases, firm nodes in 68.57% cases.

Investigations- A high index of suspicion is required to diagnose TB lymphadenitis as it mimics many other conditions and physical as well as laboratory findings are very inconsistent.

A number of diagnostic techniques are available for diagnosis of tuberculosis. Over the last few years, there has been a changing trend and improved diagnostic approach to nodal TB. Yet few basic investigations though not specific and much helpful, like E.S.R., Mantoux test are routinely been done. Chest X ray is done usually to evaluate pulmonary TB, mediastinal lymph nodes.

In the present study, 17 cases (13%) had coexisting active tubercular lesions confirmed on chest x-rays. This finding differs with the observations of Daudpota et al

(2013).[18] and Magsi et al (2013).[19] who had reported coexisting active tubercular lesions in chest in 3.64% and 7.5% cases respectively.

29 cases (52.72%) had a history of contact with a tuberculosis patient. This observation differs with the study of Ismail and Muhammad (2013). who reported a history of contact with tuberculosis patient in 27.8% cases. 36 cases (65.45%) have elevated levels of E.S.R., while it is normal in 19 cases. This finding is in accordance with the observations of Ismail and Muhammad (2013).who found raised levels of ESR in 60% cases.

Mantoux test is positive in 40 cases (73%), while it is negative in 15 cases (27%). This observation is consistent with the studies of Shrestha et al (2010).[20] and Biswas and Begum (2007).[21] who reported Mantoux positivity in 76.19% and 70% cases respectively.

Histopathology- Histopathological examination of the tissue gives valuable information regarding the pathogenesis of TB lymphadenopathy. Literature has strongly supported that excision biopsy is the gold standard in diagnosing TB lymphadenopathy. It is also a therapeutic tool in treating persistent nodes after ATT. Identification of caseating granulomatous inflammation with Langhans and foreign body giant cells supports a diagnosis of TB. Though histopathology is most rewarding for diagnosis of cervical lymphadenitis, its feasibility is limited due to lack of facilities in peripheral health-care centers and its non-acceptability, as it is an invasive procedure. Incisional biopsy is associated with sinus tract and fistula formation and therefore is contraindicated.

F.N.A.C has replaced excision biopsy being a simple, less expensive out- patient diagnostic procedure and is now a days widely used for the diagnosis of tuberculous lymphadenitis and Excision biopsy being only reserved for patients with negative FNAC despite high clinical suspicion.

In the present study FNAC is done in all 130 patients. TB lymphadenitis is reported in 55 cases. FNAC is repeated twice in 5 cases because of haemorrhagic aspirate in 2 cases and inconclusive findings in 3 cases. FNAC reported as granulomatous lymphadenitis with caseation in 2 cases, chronic granulomatous lymphadenitis possibly TB in 32 cases, necrotising type in 10 cases and cold abscess in 11 cases.

Excision biopsy is done in 18 cases for definitive diagnosis in 3 cases and for persistent lymph nodes after ATT in 15 cases.

Advantages- Aspirated material can be subjected to Ziehl-Neelsen (ZN) staining for acid fast bacilli (AFB), mycobacterial culture and sensitivity testing.

Polymerase chain reaction (PCR) analysis of FNA aspirates is a promising technique that allows identification and genotyping of M. tuberculosis when only a small amount of sample is obtained.

Microscopy using ZN staining procedure is rapid, cheap and easy. The sensitivity varies depending on the source of the sample. Sensitivity ranges from 46- 78% and the specificity is virtually 100%. Centrifugation and fluorochrome staining with ultraviolet microscopy markedly increases the sensitivity of microscopy. AFB yield is high in the smears in which purulent material is aspirated.

Culture- Isolation of mycobacteria by culture still represents the cornerstone on which the definitive diagnosis is based. Major constraint of culturing mycobacteria in conventional media is its slow growth, which necessitates a mean incubation period of at least four weeks.

Combination of solid and liquid media is currently the gold standard for primary isolation of Mycobacteria. Newer techniques being tried are microcolony detection on solid media, septicheck AFB method, microscopic observation of broth culture, the BACTEC 460 radiometric system, BACTEC MGIT 960 system, MB/BacT system and ESP II culture system.

Molecular Tests- Methods for the diagnosis of TB have improved in recent years with introduction of several molecular techniques in diagnostics. Though histopathology is considered as gold standard in TB lymphadenitis diagnosis, newer investigative tools like molecular tests help in confirming the diagnosis with FNAC in a relatively short time and helps in early prompt and appropriate treatment. Results are available within 24 to 48 hours. They have much higher sensitivity than conventional methods and an additional advantage of molecular methods is the direct identification of the species and detection of drug resistance.

Polymerase chain reaction (PCR) is a fast and useful technique for the demonstration of mycobacterial DNA fragments in patients with clinically suspected mycobacterial lymphadenitis. The most common target used in PCR is IS6110. Species specific and genus specific PCR methods are being used with various targets and modifications of PCR such as ligase chain reaction, transcription mediated amplification, strand displacement amplification (SDA), nucleic acid sequence based amplification (NASBA), branched DNA (b-DNA) and line probe assay (LiPA).

Treatment-

- All the cases (n=55) were given ATT as per the WHO guidelines,
- 2 months intensive phase with Isoniazid, Rifampicin and Pyrazinamide -2(HRZ)3
- 4 months-7 months continuation phase with Isoniazid and Rifampicin - 4(HR)3
- Course can be extended for 6-9 months in patients who responded slowly and who have persistent nodes at the end of 4 months of continuation phase.

The 6 months recommendation is supported by studies that showed no difference between 6 and 9 months of treatment in cure rates (89%–94%).[22,23,24] or relapse rates (3%).[25]

Excision biopsy is done in 15 cases where persistent lymph nodes are present after ATT for 9-12 months. All are

done under local anaesthesia. There are no complications after surgery.

Cause for persistence could be due to poor compliance, treatment failure where drug resistance is the most common cause.

Recent years have witnessed a dramatic upsurge in cases of drug-resistant Mycobacterium tuberculosis infections. Various studies have identified different mutations occurring in clinical isolates of M. tuberculosis, some of them are mutations in the rpoB, katG and ahpC genes.[26,27] These have implications for the control of the organism and prevention of its spread.

Malignant Lymph Nodes- In the present study it is observed that out of a total of 130 cases 28 are due to malignancy, most common cause being metastatic. In primary lymph node malignancy, lymphomas are diagnosed in 4 cases. Of the 4 cases of lymphoma, Hodgkin's are 3 cases (75%) and Non-Hodgkin's are 1 case (25%). Therefore the observed ratio of Hodgkin's to Non-Hodgkin's lymphoma is 3:1. The findings observed differ with the study of Vedi et al (2012). who reported incidence of Hodgkin's to Non-Hodgkin's lymphoma in the ratio of 2:1.

The finding of maximum involvement of level III cervical nodes in cases of metastatic lymphadenopathy is consistent with the observations of Biswas G et al (2013).In cases of lymphoma, the most common site involved is level V (posterior triangle), which is in accordance with the result of study conducted by Sharma et al (1993). The consistency of lymph nodes was hard in 18.5% cases as also reported by Vedi et al (2012). 12.85%. It is also observed that the lymph nodes in cases of Hodgkin's lymphoma are firm and rubbery, which is consistent with the study of Jamal et al (2008).

In the present study, in cases of metastatic lymphadenopathy the primary site is identified in 20 cases (83%), while in remaining 4 cases (16%) the primary site could not be detected (Occult primary). Prasad & Mohan (2014). and Tapparwal et al (2013).[28] reported to have identified the primary site in 62.63% and 69% cases respectively.

Out of 20 cases in which the primary site is identified, tumours of squamous origin are 60% while of non-squamous origin are 40%. This observation is consistent with the findings of Afroz et al (2009).[29] who reported the origin as squamous and non-squamous in 81.13% and 18.87% cases respectively. Amongst the tumours of squamous origin the primary site is distributed in oral cavity, larynx, nasopharynx and lung in 9,1,1,1 cases respectively. This finding is consistent with observations of Prasad and Mohan (2014). who reported the distribution in oral cavity and lungs in 48.75% and 8.4% cases respectively. In cases of tumours of non-squamous origin the primary site was in thyroid in 20% cases. This observation is in accordance with study of Afroz et al (2009).who reported a primary site in thyroid gland in 15.09% cases.

The patients with malignant nodes are referred to oncology units for definitive treatment.

CONCLUSION

Commonest cause of cervical lymphadenopathy is tuberculosis followed by reactive lymphadenitis and metastatic secondaries. A high index of suspicion is required in diagnosing TB lymphadenitis as it mimics clinically and pathologically many other conditions, failing when treatment is delayed.

FNAC is simple, safe, quick, cheap, acceptable yet accurate method of establishing the aetiology in cases of cervical lymphadenopathy. It is to be considered as first investigation in cervical lymphadenitis and if facilities are available the sample can be used for culture sensitivity.

Treatment regimen for tuberculous lymphadenitis includes three drugs Isoniazid, Rifampicin, Pyrazinamide for 2 months followed by Isoniazid and Rifampicin for 4-7 months and may need further prolonged course as the response to ATT is slow in extra pulmonary Tuberculosis when compared to pulmonary tuberculosis.

Excision biopsy can be done to treat persistent lymph nodes without any complications if the node is excised by dissection in correct plane and excised in toto.

REFERENCES

[1] Allhiser JN, McKnight TA, Shank JC. Lymphadenopathy in a family practice. J Fam Pract 1981;12(1):27-32.
[2] Pandit AA, Candes FP, Khubchandhani SR. Fine needle aspiration cytology of lymph nodes. J Postgrad Med 1987;33(3):134-136.
[3] Mahbod G, Koasri F, Tafreshi MA. Fine needle aspiration cytology in diagnosis of non-thyroidal neck masses. Acta Medica Iranica 2002;40(1):49-51.
[4] Biswas G, Das A, Haldar D, et al. Clinico-pathological correlates of cervical lymphadenopathy: a hospital based study. Indian J Otolaryngol Head Neck Surg 2013;65(Suppl 1):S42–S47.
[5] Pandav AB, Patil PP, Lanjewar DN. Cervical lymphadenopathy-diagnosis by F.N.A.C., a study of 219 cases. Asian Journal of Med Res 2012;1(3):79-83.
[6] Adhikari P, Sinha BK, Baskota DK. Comparison of fine needle aspiration cytology and histopathology in diagnosing cervical lymphadenopathies. Australas Medical Journal 2011;4(2):97-99.
[7] Dukare SR, Jadhav DS, Gaikwad AL, et al. Fine needle aspiration cytology of cervical lymphadenopathy-a study of 510 cases. Asian Journal of Science and Technology 2014;5(9):537-540.
[8] Backer AID, Mortele KJ, Keulenaer BLD, et al. Tuberculosis: epidemiology, manifestations, and the value of medical imaging in diagnosis. JBR-BTR 2006;89:243-250.
[9] Vedi JN, Patel S, Ghormare A. Clinicopathological study in patients of cervical lymphadenopathy. Odisha Journal of Otorhinolaryngology & Head & Neck Surgery 2012;6(1):14-17.
[10] Golden MP, Vikram HR. Extrapulmonary tuberculosis: an overview. Am Fam Physician 2005;72(9):1761-1768.

[11] Shubha AB, Sapna H, Dinesh RB. Tuberculosis lymphadenitis presenting a diagnostic dilemma-a case report. Int J Dent Clin 2010;2(2):48-52.
[12] Artenstein AW, Kim JH, Williams WJ, et al. Isolated peripheral tuberculous lymphadenitis in adults: current clinical and diagnostic issues. Clin Infect Dis 1995;20(4):876-882.
[13] Quast TM, Browning RF. Pathogenesis and clinical manifestations of pulmonary tuberculosis. Dis Mon 2006;52(11):413-419.
[14] Yew WW, Lee J. Pathogenesis of cervical tuberculous lymphadenitis: pathways to anatomical localization. Tuber Lung Dis 1995;76(3):275-276.
[15] Baskota DK, Prasad R, Sinha BK, et al. Distribution of lymph nodes in the neck in cases of tuberculous cervical lymphadenitis. Acta Otolaryngol 2004;124(9):1095-1098.
[16] Ismail M, Muhammad M. Frequency of tuberculosis in cervical lymphadenopathy. JPMI 2013;27(3):342-346.
[17] Maharjan M, Hirachan S, Kafle PK, et al. Incidence of tuberculosis in enlarged neck nodes, our experience. Kathmandu Univ Med J 2009;7(25):54-58.
[18] Daudpota AQ, Ansari MA, Wagho NA. Incidence of tuberculosis in cervical lymphadenopathy. ISRA Medical Journal 2013;5(1):23-25.
[19] Magsi PB, Jamro B, Shaikh AA, et al. An audit of 140 cases of cervical lymphadenopathy at tertiary care hospital. Gomal Journal of Medical Sciences 2013;11(1):47-48.
[20] Shrestha D, Thapa P, Dahal M. Tuberculous and nontuberculous cervical lymphadenopathy - a clinical review. Nepalese Journal of ENT Head & Neck Surgery 2010;1(2):12-13.
[21] Biswas PK, Begum SMKN. Tubercular cervical lymphadenopathy clinicopathological study of thirty cases. TAJ 2007;20(1):36-38.
[22] Campbell IA, Ormerod LP, Friend JA, et al. Six months versus nine months chemotherapy for tuberculosis of lymph nodes: final results. Respir Med 1993;87(8):621-623.
[23] Yuen AP, Wong SH, Tam CM, et al. Prospective randomized study of thrice weekly six-month and nine-month chemotherapy for cervical tuberculous lymphadenopathy. Otolaryngol Head Neck Surg 1997;116(2):189-192.
[24] van Loenhout- Rooyackers JH, Laheij RJ, Richter C, et al. Shortening the duration of treatment for cervical tuberculous lymphadenitis. Eur Respir J 2000;15(1):192-195.
[25] Fang Z, Doig C, Rayner A, et al. Molecular evidence for heterogeneity of the multiple-drug-resistant Mycobacterium tuberculosis population in Scotland (1990 to 1997). J Clin Microbiol 1999;37(6):998-1003.
[26] Siddiqi N, Shamim M, Hussain S, et al. Molecular characterization of multidrug-resistant isolates of Mycobacterium tuberculosis from patients in North India. Antimicrob Agents Chemother 2002;46(2):443-450.
[27] McCarthy OR, Rudd RM. Six months chemotherapy for lymphnode tuberculosis. Respir Med 1989;83(5):425-427.
[28] Tapparwal V, Nitesh M, Gupta A. Fine needle aspiration cytology of metastatic neck lymph nodes: a review of 100 cases. NJIRM 2013;4(5):76-80.
[29] Afroz M, Akhtar NA, Siddiquee BH. Metastatic neck node-a clinical study of 60 cases. Bangladesh J of Otorhinolaryngology 2009;15(1):26-30.