

## Clinico-Pathological Study on Neck Nodes in Inflammatory Conditions of the Head and Neck

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**Abstract:** The prime function of lymph node is to deal with antigen. Lymph nodes respond to antigen by enlargement in size, shape, number and consistency. Cervical lymphadenopathy is one of the commonest presentations of underlying pathology of the head and neck region which has large number of differential diagnosis like neoplasms, infections, immune deficiency disorders and also in rare disorders. Fine needle aspiration cytology is a cheap and accurate first line investigation in lymphadenopathy. Objectives: 1. To study the various clinical presentations of inflammatory cervical lymphadenopathy, 2. To co-relate FNAC findings with clinical diagnosis. Study design: Cross sectional descriptive study. Study set up: This study was conducted in the Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur. Duration of study : The study was carried out for a period of 2 years from September 2019 to August 2021. Study population: patients presenting with Neck Nodes  $\geq 1$ cm. Result: 54.4% of the patients had non-specific reactive lymphadenitis, 27.4% of the patients had tubercular-caseating granulomatous lymphadenitis.

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### I. Introduction:

The prime function of lymph node is to deal with antigen. Lymph nodes respond to antigen by enlargement in size, shape, number and consistency.<sup>1</sup> The neck consists of nearly 1/3rd of the total lymph nodes of the body and strategically placed along the drainage of tissue and body fluids.<sup>2</sup>

Cervical lymphadenopathy is one of the commonest presentations of underlying pathology of the head and neck region which has large number of differential diagnosis like neoplasms, infections (specific and non-specific), immune deficiency disorders and also in rare disorders like inflammatory pseudo tumour (plasma cell granuloma) and Kikuchi-Fujimoto disease.<sup>3</sup> Reactive lymphadenitis can mimic many features of other important differential diagnosis of neck masses. Hence a clinician should have a wide array of suspicion before coming to the definitive diagnosis and management.<sup>4</sup>

Based on the duration, cervical lymphadenopathy is further classified into acute lymphadenopathy (2 weeks duration), sub-acute lymphadenopathy (2-6 weeks duration), and chronic lymphadenopathy (any lymphadenopathy that does not resolve by 6 weeks).<sup>5</sup> The etiological profile of cervical lymphadenopathy varies from region to region. In developing countries like India, acute respiratory infection, suppurative skin infection and tuberculosis are main causes for cervical lymphadenopathy while in developed countries secondary carcinoma are the most frequent causes for cervical lymphadenopathy.<sup>6</sup> Generally in young patients, common causes include congenital conditions, infectious/ inflammatory diseases and trauma; where in elder patients especially more than 40 years, neoplasm forms an important differential diagnosis.<sup>7</sup> It is also a well-known fact that cervical lymph node metastases is one of the first symptom of cancer. Carcinoma metastatic to the neck with an unknown primary tumor site accounts for approximately 3% to 5% of all head and neck cancers.<sup>8</sup> Peripheral tuberculous lymphadenopathy is the commonest form of extra pulmonary tuberculosis not only in the Indian subcontinent but also in most countries of Asia and Africa and cervical lymph node glands are the commonest to be involved.<sup>9</sup>

Various diagnostic modalities like fine needle aspiration cytology (FNAC), ultrasonography (USG), computerized tomography, PET CT neck, Magnetic Resonance Imaging (MRI), etc are now available to diagnose underlying disease in cervical lymphadenitis. These investigating tools have high sensitivity and specificity for cervical lymphadenopathy. Fine needle aspiration cytology is a cheap and accurate first line

investigation in lymphadenopathy.<sup>10</sup> Because of early availability of results, simplicity, minimal trauma and complications, the aspiration cytology is now considered as a valuable diagnostic aid and it provides ease in following patients with known malignancy and ready identification of metastasis or recurrence.<sup>11</sup> It can be used for both cytology and culture (in cases in which a suspected infectious neck mass does not respond to conventional antibiotic therapy). If FNA is unsuccessful or if sufficient information is not obtained from an initial FNA, the FNA should be repeated before open biopsy.<sup>12</sup> FNAC is the first line investigation to rule out the causes of lymphadenopathy. Biopsy is general avoided in most of the cases as FNAC is fairly accurate in the diagnosis of cervical lymphadenopathy. FNAC is the choice of investigation in children also because it allays tension and anxiety of surgical procedure.<sup>13</sup>

This study aims to describe the pattern of lymphadenopathy with demographic and clinical profiles of the patients presenting in the outpatient department of our hospital. It also intends to systematically summarize the various pathological conditions and clinical presentations of patients presenting with enlarged lymph nodes in the neck. Hence, helping the clinicians to have a basic idea about the prevalence of different clinical profiles of cervical lymphadenopathy for easier case detection and better therapeutic outcome.

## **OBJECTIVES**

1. To study the various clinical presentations of inflammatory cervical lymphadenopathy
2. To co-relate FNAC findings with clinical diagnosis

## **II. Material And Methods**

**STUDY DESIGN:** This study was a Cross sectional descriptive study.

**STUDY SET UP:** This study was conducted in the Department of Otorhinolaryngology, Regional Institute of Medical Sciences, Imphal, Manipur.

**DURATION OF STUDY:** The study was carried out for a period of 2 years from September 2019 to August 2021.

**STUDY POPULATION:** All patients presenting with Neck Nodes  $\geq 1$ cm attending OPD and admitted in the department of Otorhinolaryngology, RIMS, Imphal, were enrolled for the study.

### **Inclusion criteria:**

- 1) Patients with acute/chronic lymph node swelling which is non neoplastic
- 2) Presenting with neck node 1 cm or more
- 3) Patients with acute cervical lymphadenitis which does not regress with antibiotic

### **Exclusion criteria:**

- 1) Patients unwilling to give informed consent
- 2) Patients not willing for FNAC or any other invasive procedure like biopsy
- 3) Patients with non-lymphoid cervical masses

**SAMPLE SIZE: 236**

### **PROCEDURE:**

Informed written consent about the purpose of the study was obtained from the patients after they agreed to participate in the study. Demographic data such as age, sex, educational level, occupation, history of present illness, history of past illness, personal history, family history, co-morbidity, symptomatology and examination was recorded in the data abstraction form.

### **Procedure of taking FNAC:**

After the patient was instructed about the procedure, the skin of where the nodes were present was cleaned spirit, betadine and spirit in order. The needle was attached to a 20cc plastic syringe with cameco handle. Syringe was then manipulated with the dominant hand while the swelling was fixed with the other hand. The needle was inserted centrally into small nodule and peripherally into the larger ones perpendicular to the surface of the skin. A sensation of resistance was felt, as the needle pierced the swelling because of the fibrous capsule, or pseudo capsule, around the tumour mass. Once the needle was within mass, continuous negative pressure was applied by withdrawing the plunger to obtain an adequate specimen. The needle was moved within the circumscribed area with to and fro movements with short stabs and a corkscrew method. Admixture with blood was noticed to be less when the needle was moved along the same track rather than in multiple directions. The junction of the needle and hub of the syringe was observed while performing actual aspiration. On the appearance of any sample aspirate, the aspiration was stopped before the needle withdrawal. Needle was then

gradually drawn from the mass. After withdrawal, the needle was detached from the syringe, the plunger completely reattached and finally aspirated specimen was ejected on to the slides. In case of cystic swellings, fluid was aspirated completely and then the residual nodule was aspirated to obtain cellular material. The ideal aspirate was a creamy consistency due to high cell content in a small amount of fluid and remained inside the needle. Slides were prepared from the aspirated material. Already prepared slides were stained with Giemsa stain. PAP stain was also done when it was necessitated. Stained slides were then examined under microscope.

**DATA MANAGEMENT AND STATISTICS ANALYSIS:** Data was entered in IBM SPSS Version 21.0 for Windows, Armonk NY: IBM Corp. and summarized using frequencies & proportions for categorical variables like gender, religion, clinical presentation etc. Mean and Standard deviation was used to present continuous data like age and size of nodes.

### III. RESULTS

In this study, a total of 226 patients who fulfilled the inclusion and exclusion criteria were included in the study. The age of the respondents ranged from 3 to 78 years, with mean age of 33.36±19.84 years.

**Table 1. Presenting symptoms (N=226)**

Symptoms	Frequency (n)	Percentage (%)
Fever	122	54.0%
Difficulty in swallowing	88	38.9%
Pain	79	35%
Malaise	51	22.6%
Cough	46	20.4%
Loss of weight	36	15.9%
Loss of appetite	34	15.0%
Change in voice	19	8.4%

More than half (54%) of the patients presented with fever, followed by difficulty in swallowing (38.9%), Pain 35%, Malaise (22.6%), Cough (20.4%), Loss of weight (15.9%), Loss of appetite (15%) and change in voice (8.4%).

**Table 2. Findings of structures in oral cavity and oropharynx**

Structures in oral cavity and oropharynx	Frequency (n)	Percentage (%)
<b>Teeth</b>		
Dental Caries	61	27%
Normal	165	73%
<b>Uvula</b>		
Congested	19	8.4%
Normal	207	91.6%

<b>Anterior pillar of tonsil</b>		
<b>Congested</b>	130	57.5%
<b>Normal</b>	96	42.5%
<b>Posterior pillar of tonsil</b>		
<b>Congested</b>	82	36.3%
<b>Normal</b>	144	63.7%
<b>Posterior pharyngeal wall</b>		
<b>Congested</b>	40	17.7%
<b>Granular</b>	56	24.8%
<b>Normal</b>	130	57.5%

More than half (57.5%) of the patients had congested anterior pillar of the tonsils, while 36.3% of the patients had congested posterior pillar of tonsils, more than one-fourth (27%) of the patients had dental caries, 24.8% and 17.7% of the patients had granular and congested posterior pharyngeal wall on examination.

**Table 3. Distribution of incidence of swelling at various levels of the neck**

<b>Swelling at neck level</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
Level 1A	2	0.9%
Level 1B	34	15%
Level 2A	136	60.2%
Level 2B	2	0.9%
Level 3	52	23%
Level 4	16	7.1%
Level 5A	76	33.6%
Level 5B	2	0.9%
Level 6	4	1.8%

Majority of the patients had swelling at level 2 of the neck, followed by level 5 (33.6%), level 3 (23%), level 1 (15%) and the rest of the swelling were located in other levels of the neck.

**Table 4. Examination of swelling of the neck**

<b>Examination</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Number of swelling</b>		
1	106	46.9%
2	73	32.3%
≥3	47	20.8%
<b>Laterality of swelling</b>		
Right	70	31%
Left	77	34.1%
Bilateral	79	35%
<b>Shape</b>		
Oval	192	85%

Globular	22	9.7%
Lobulated	12	5.3%
<b>Surface of swelling</b>		
Lobulated	2	0.9%
Sinus/ulcer	10	4.4%
Smooth	214	94.7%
<b>Edge/margin of swelling</b>		
Diffused	6	2.7%
Ill-defined	10	4.4%
Well defined	210	92.9%
<b>Skin over the swelling</b>		
Erythematous	12	5.3%
Sinus/ulcer	10	4.4%
Normal	204	90.3%
<b>Fixation over skin</b>		
Fixed to skin	6	2.7%
Free	220	97.3%
<b>Local Temperature</b>		
Raised	10	4.4%
Normal	216	95.6%
<b>Consistency of swelling</b>		
Soft	8	3.5%
Firm	218	96.5%
<b>Tenderness</b>		
Present	106	46.9%
Absent	120	53.1%
<b>Edge/margin of swelling</b>		
Well defined	204	90.3%
Ill-defined	22	9.7%
<b>Surface of swelling</b>		
Smooth	224	99.1%
Rough	2	0.9%
<b>Induration over the swelling</b>		
Present	8	3.5%
Absent	218	96.5%
<b>Matted/discreet over skin</b>		
Matted	17	7.5%
Discreet	209	92.5%

Almost half (46.9%) of the patients had single swelling while one-third of them had 2 swelling and the rest (20.8%) of the patients had 3 or more swelling. More than one-third of the patients had swelling on both sides of the neck. Majority of the patients had oval shaped swelling, which was smooth on the surface and had well defined edge (85%, 94.7% and 92.9% respectively). Only 5.3% and 4.4% of the swelling had erythematous and sinus/ulcers over the skin of the swelling, and 2.7% of the swelling was fixed to the skin.

Majority of the swelling had normal temperature and consistency of the swelling was firm (95.6% and 96.5% respectively). Almost half (46.9%) of the swelling had tenderness. Most of the swelling margins was

well-defined and almost all swelling had smooth surface (99.1%). 3.5% of the patients had induration over the swelling, while 7.5% were matted.

**Table 5. Investigation findings of the patients**

<b>Investigation</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Total Leucocyte Count (TLC)</b>		
Normal	79	35%
Increased	131	58%
Decreased	16	7%
<b>ESR</b>		
Normal	52	23%
Increased	170	75.2%
Decreased	4	1.8%
<b>RBS</b>		
Normal	209	92.5%
Increased	17	7.5%
<b>R-antibody</b>		
Positive	29	12.8%
Negative	197	87.2%
<b>Chest X-Ray</b>		
Apical Consolidation	4	1.8%
Consolidation	33	14.6%
Normal	189	83.6%
<b>X-ray Soft tissue Neck</b>		
Adenoid Hypertrophy	2	0.9%
Increased soft-tissue neck	14	6.2%
Normal	210	92.9%
<b>CT Neck</b>		
Cervical LN	2	0.9%
Multiple LN	6	2.7%
Matted LN	4	1.8%
Left Submandibular Abscess	2	0.9%
Left thyroid lobe colloid cyst	2	0.9%
Suppurative LN with fistula	2	0.9%
Suppurative Lymph Adenitis	2	0.9%
<b>USG Findings</b>		
Hypoechoic Cervical Lymph node	2	0.9%
Left submandibular swelling	2	0.9%

Left thyroid lobe colloid cyst	2	0.9%
Multiple Cervical lymph node	4	1.8%

More than half (58%) had increased TLC, while 7% had decreased TLC. Three-fourth of the patients had increased ESR. Majority had normal random blood sugar and 12.8% of the patients were R-antibody positive.

On investigation with imaging techniques, 14.6% had consolidated lungs while 1.8% had apical consolidation on Chest X-Ray. Majority of the patients had normal finding on X-ray of the soft tissue neck. On CT scan, 2.7% showed multiple lymph nodes, 1.8% had matted lymph node. On ultrasound, 0.9% showed Hypoechoic Cervical Lymph node, Left submandibular swelling, and Left thyroid lobe colloid cyst respectively, while 1.8% showed multiple cervical lymph node.

**Table 6. FNAC Results**

FNAC Results	Frequency (n)	Percentage (%)
<b>Non Specific reactive Lymphadenitis</b>	123	54.4%
<b>Tubercular- Caseating granulomatous lymphadenitis</b>	62	27.4%
<b>Suppurative Lymphadenitis</b>	26	11.5%
<b>Granulomatous Lymphadenitis</b>	13	5.8%
<b>Others</b>	2	0.9%

On FNAC, more than half of the patients had non-specific reactive lymphadenitis. More than one-fourth of the patients had tubercular-caseating granulomatous lymphadenitis. While other patients had suppurative lymphadenitis (11.5%) and granulomatous lymphadenitis (5.8%).

#### IV. Discussion

Cervical lymphadenopathy is a commonly observed entity by clinicians throughout the world. It could be secondary to most trivial cause like scalp infection to most serious entity like malignancy. Accurate diagnosis of cervical lymphadenopathy is very important. The evaluation and diagnosis of lymph node enlargement in the neck is a challenging task because most of the diseases resemble each other. Therefore, improper diagnosis and the treatment may convert a potentially curable disease into an incurable one. Thus, one should be vigilant and correlate clinical findings and pathological diagnosis to arrive at proper diagnosis.

In this study, a total of 226 patients who fulfilled the inclusion and exclusion criteria were included in the study. Majority (37.6%) of them belonged to the age group of 21-40 years. A study by Borse H and Bhamre A<sup>15</sup> also observed similar findings whereby, 50% of the patients were in the age group of 21-40 years of age). Female preponderance was also observed from studies by Awati J et al,<sup>17</sup> where they reported male female ratio to be 1:1.6 and Mutiullah S et al (1:1.2).<sup>6</sup>

Lymph node enlargement often raises fears about serious illness, though most of the time it usually results from benign infectious causes. This apprehension arises due to the spectra of causes, which includes microbial, hematological, neoplastic, and connective tissue disorders.<sup>21</sup> Several studies on peripheral lymphadenopathy in various countries have shown that cervical lymph nodes are the most frequently enlarged and biopsied of all peripheral lymph nodes.<sup>22,23,24</sup> In our study, all the patients cervical lymphadenopathy as chief complaint, we also observed that more than half (54%) of the patients presented with fever, followed by difficulty in swallowing (38.9%), Pain 35%, Malaise (22.6%), Cough (20.4%), Loss of weight (15.9%), Loss of appetite (15%) and change in voice (8.4%). Majority of the patients presented in the hospital during the first 2 weeks of illness. Majority of the patients did not have any other associated illness except for 62 (27.4%) who had history of Tuberculosis or history of close contact with TB patients and 4 of the patients had Diabetes. Jalal et al<sup>70</sup> in their study reported that fever (71.3%) and cough (25.5%) were most common presenting. Motiwala et al<sup>12</sup> in their study, reported neck swelling to be present in all their cases, followed by fever (60%), loss of weight (46.96%), malaise (36.52%), loss of appetite (23.48%), cough (18.26%), difficulty in swallowing (6.96%), and change in voice was present in 6.96% respectively.

Majority (almost two-third) of the patients had swelling at level 2 of the neck, which drains the oropharynx, oral cavity, nasopharynx, hypopharynx and larynx, parotid gland. Next most common swelling was level 5 (33.6%), which represents the posterior triangle lymph nodes. These were followed by Level 3 (23%) lymph node swelling which refers to the lymph node of the middle jugular chain and level 1 (15%) swelling are located at the submental and submandibular triangle. Our observation is in concordance with the study done by Maheshwari R et al,<sup>49</sup> where they reported 50% of their patients presenting with level 2 lymph node involvement, followed by level 5 and level 3 group of lymph node involvement. Awati J et al<sup>17</sup> also observed level 2 group of lymph nodes having the highest involvement in their study.

On inspection of the neck, majority of the patients in this study had unilateral and single swelling. This is supported by studies by Motiwala et al<sup>12</sup> where they observed about 90% of their study participants to have unilateral cervical lymph node involvement. In our study, Majority of the patients had oval shaped swelling, which was smooth on the surface and had well defined edge (85%, 94.7% and 92.9% respectively). Only 5.3% and 4.4% of the swelling had erythematous and sinus/ulcers over the skin of the swelling, and 2.7% of the swelling was fixed to the skin. Majority of the swelling had normal temperature and consistency of the swelling was firm (95.6% and 96.5% respectively), almost half (46.9%) of the swelling had tenderness, 3.5% of the patients had induration over the swelling, while 7.5% were matted. Awati J et al<sup>17</sup> observed 52% of the patients having firm and discreet lymphadenopathy in their study. Melkundi RS et al<sup>28</sup> in their study, observed 78% of the patients examined had lymph nodes which were firm in consistency, 18% were observed to have matted lymph nodes, 10% were fixed to the underlying structures.

ESR was raised in three-fourth of the patients and associated lung involvement was detected in chest radiography for 16.4% of the study participants, similar findings also seen in other Indian study.<sup>31</sup>

FNAC is a confirmatory diagnostic aid and was done in all the cases. We observed that, more than half (54.4%) of the patients had non-specific reactive lymphadenitis. More than one-fourth (27.4%) of the patients had tubercular-caseating granulomatous lymphadenitis. While other patients had suppurative lymphadenitis (11.5%) and granulomatous lymphadenitis (5.8%). In this study, all the 62 patients confirmed on FNAC to have tubercular-caseating granulomatous lymphadenitis, were clinically diagnosed to have tuberculosis. Infection in the tonsils (57.5%) and posterior pharyngeal wall (42.5%) might be some of the cause of non-specific reactive lymphadenitis in our study. Most of the diseases are medically curable with limited role for surgery in non-neoplastic lesions, as observed in our study. In concordance with our observation, Batni G et al<sup>16</sup> also observed non-specific reactive lymphadenopathy in more than half of their patients, while 28.12% were due to tuberculosis. Shakya et al<sup>26</sup> also observed 50.4% of their study participants to have non-specific reactive lymphadenopathy. Other studies done in India<sup>12</sup> reported tuberculosis as the most common cause of cervical lymphadenopathy, which was followed by reactive lymphadenitis. In a study by Mili MK et al<sup>20</sup> tuberculosis was observed to be the most frequent cause (58%), metastatic disease in 31%, lymphoma in 7% and reactive lymphadenopathy in 5% of the cases. Al-Tawfiq JA et al,<sup>27</sup> in their study of 11 years observed reactive disease (52.2%) as the most common histopathological diagnosis, which was followed by granulomatous disease (15.5%). They detected carcinoma in 14.6% of the patients and Hodgkin's lymphoma in 8.8% and non-Hodgkin's disease in 8.8%.

Thus, in most of the literatures available, reactive disease and tuberculosis was found to be the leading causes of cervical lymphadenopathy, which is in line with our observations.

To conclude, cervical lymphadenopathy is an important clinical entity, which is commonly encountered in clinical practice. The presentation of cervical lymphadenopathy in the clinical setting has limited significance and dependence on clinical evidence alone would lead to erroneous diagnosis in a substantial number of cases. In the developing countries where tuberculous infection is common and other granulomatous diseases are rare, the presence of granulomatous features on fine needle aspiration cytology is highly suggestive of tuberculosis.<sup>29</sup> Thus, fine needle aspiration cytology is a well-established and cost-effective diagnostic tool in assessment of cervical masses and various literatures have also suggested, it may obviate the need for excisional biopsy in most of the patients.<sup>30</sup>

## **V. Conclusion**

In this study, a total of 226 patients who fulfilled the inclusion and exclusion criteria were included in the study. The age of the respondents ranged from 3 to 78 years, with mean age of 33.36±19.84 years. More than half (55.8%) of the participants were female, majority (37.6%) of them belonged to the age group of 21-40 years and were Hindu by religion (51.8%). In our study, all the patients cervical lymphadenopathy as chief complaint, we also observed that more than half (54%) of the patients presented with fever, followed by difficulty in swallowing (38.9%), Pain 35%, Malaise (22.6%), Cough (20.4%), Loss of weight (15.9%), Loss of appetite (15%) and change in voice (8.4%). Majority of the patients presented in the hospital during the first 2 weeks of illness. Majority of the patients did not have any other associated illness except for 62 (27.4%) who had history of Tuberculosis or history of close contact with TB patients and 4 of the patients had Diabetes. Majority



(almost two-third) of the patients had swelling at level 2 of the neck, which drains the oropharynx, oral cavity, nasopharynx, hypopharynx and larynx, parotid gland. Next most common swelling was level 5 (33.6%), which represents the posterior triangle lymph nodes. These were followed by Level 3 (23%) lymph node swelling which refers to the lymph node of the middle jugular chain and level 1 (15%) swelling are located at the submental and submandibular triangle. On inspection of the neck, majority of the patients in this study had unilateral and single swelling. On palpation of the swelling, majority had normal temperature and consistency of the swelling was firm (95.6% and 96.5% respectively), almost half (46.9%) of the swelling had tenderness, 3.5% of the patients had induration over the swelling, while 7.5% were matted. ESR was raised in three-fourth of the patients and associated lung involvement was detected in chest radiography for 16.4% of the study participants. We observed that, more than half (54.4%) of the patients had non-specific reactive lymphadenitis. More than one-fourth (27.4%) of the patients had tubercular-caseating granulomatous lymphadenitis. While other patients had suppurative lymphadenitis (11.5%) and granulomatous lymphadenitis (5.8%). In this study, all the 62 patients confirmed on FNAC to have tubercular-caseating granulomatous lymphadenitis, were clinically diagnosed to have tuberculosis. Infection in the tonsils (57.5%) and posterior pharyngeal wall (42.5%) might be some of the cause of non-specific reactive lymphadenitis in our study. Most of the diseases are medically curable with limited role for surgery in non-neoplastic lesions, as observed in our study.

To conclude, cervical lymphadenopathy is an important clinical entity, which is commonly encountered in clinical practice. The presentation of cervical lymphadenopathy in the clinical setting has limited significance and dependence on clinical evidence alone would lead to erroneous diagnosis in a substantial number of cases. In the developing countries where tuberculous infection is common and other granulomatous diseases are rare, the presence of granulomatous features on fine needle aspiration cytology is highly suggestive of tuberculosis. Thus, fine needle aspiration cytology is a well-established and cost-effective diagnostic tool in assessment of cervical masses and various literatures have also suggested, it may obviate the need for excisional biopsy in most of the patients.

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