

Paper Title(Cytological Diagnosis of Lymphadenopathy on FNAC- A Study from Rural Tertiary Care Hospital (Chamba, H.P).

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Abstract:Introduction- Lymphadenopathy often occurs in the head and neck or inguinal areas and usually noted in clinical practice. . Enlarged lymph nodes could be due to infection, metastatic malignancy or lymphoma. Fine needle aspiration cytology is an economical and reliable first line investigation in lymphadenopathy . FNAC is now considered as a valuable diagnostic aid as it gives early results, it is a simple procedure ,causes minimal trauma and complications.

Material and methods- We carried out this study in Department of Pathology, Pt. JawaharLal Nehru Govt. Medical College, Chamba (H.P, India) from 1 Dec 17 to 31 April 18.We received patients in cytology section with lymph node swellings from medicine, surgery ,ent, skin, gynecology department. After proper history taking and clinical examination, we performed FNAC from appropriate site.

Result- Tuberculous lymphadenitis formed 60%, followed by reactive lymphadenitis with 30 % , then 8.6 % metastatic pathology followed by 1.6 % of malignant pathology.

Discussion- Tuberculosis is still rampant in India, especially in rural area like ours. The incidence of TB was found to be higher in females than males in our study. There may be many reasons for higher prevalence of TB in females. Firstly, females in rural areas are malnourished and have a low immunity, thus are vulnerable to infectious diseases like TB.

Conclusion-- Despite its limitations and pitfalls, FNAC appears as a good first line method for investigating the cases of lymphadenopathy. It can be concluded from our study, that tuberculous lymphadenitis shows high burden of cases in our community.

Keywords-lymphadenopathy, FNAC, lymphadenitis

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I. Introduction

Lymphadenopathy often occurs in the head and neck or inguinal areas and usually noted in clinical practice. Enlarged lymph nodes could be due to infection, metastatic malignancy or lymphoma. [1]. Based on the duration, cervical lymphadenopathy is further classified into acute lymphadenopathy (2 weeks duration), subacute lymphadenopathy (2-6 weeks duration), and chronic lymphadenopathy (> 6 weeks) [2]. Fine needle aspiration cytology is an economical and reliable first line investigation in lymphadenopathy [3]. FNAC is now considered as a valuable diagnostic aid as it gives early results, simple procedure , minimal trauma and complications [4]

Tuberculosis (TB) is an important health problem in developing and underdeveloped nations and remains a big burden on community health. It is a great challenge to eradicate TB for a country like India, where TB is endemic to due to lack of adequate diagnostic assays [5]. A lot of research and development has taken place in formulating optimal diagnosis and treatment of pulmonary TB.

However, diagnosis of Extra Pulmonary TB (EPTB) is still complex, as the number of Mycobacterium Tuberculosis Bacilli (MTB) present at the suspected clinical site is often low and clinical material from deep-seated lymph nodes is difficult to obtain [6].

Histopathology is time-consuming and remains difficult to undertake and establish the diagnosis of TB with high specificity [6]. Fine Needle Aspiration Cytology (FNAC) to diagnose TB obviates the need for lymph node excisional biopsy. Since, FNAC carries a high degree of accuracy; it is used in diagnosis at the initial step as well as in the follow-up post treatment of tubercular peripheral lymphadenopathy [7]. When compared, Excisional biopsy has the highest sensitivity, whereas FNA is less invasive, pain free, OPD

procedure with no morbidity. It has been available for nearly two decades and still serves as the first-line diagnostic technique in superficial TB lymphadenopathy with sensitivity and specificity of 79% and 94% respectively [8].

In order to obtain faster results, Nucleic Acid Amplification Test (NAAT) is being increasingly used worldwide for the rapid diagnosis of TB.

However, CB-NAAT is not a very significant test for diagnosis of Tubercular peripheral lymphadenopathy, especially in FNAC negative cytology. Moreover, it is not very cost effective, demands a trained man force, 24-hour electricity backup, regular maintenance and calibration.

Enlarged palpable cervical lymph nodes are common and worrying presentation in adults as well as in children. Cervical lymph nodes are involved most often in all types of lymphadenopathy particularly reactive hyperplasia and Hodgkin lymphoma [9].

The diagnosis of metastatic tumor to the lymph node on cytological smear is crucial and highly reliable. This would be the sole indication for searching the primary tumor, especially in cases of occult carcinoma [5]. Most of metastatic carcinoma can be identified by their cytomorphological characteristics alone. However, there are some instances where features of different tumors overlap and the precise diagnosis of the primary tumor remains obscure [6].

FNAC is also used to assess the staging of primary lymphoid malignancies as well as to recognize the residual and recurrent lymphoid malignancies [8]. However, the role of FNAC for the initial diagnosis and subclassification of primary lymphoid malignancy is still controversial and the cytological diagnosis of lymphoma on FNAC is still very often followed by tissue biopsy in most cases [10]. Since the latest World Health Organization (WHO) lymphoma classification is based not only on the architectural pattern, but also on cellular morphology, phenotype, and genotype of malignant lymphoid cells; and all of which cannot be assessed on cytology. Therefore, FNAC in combination with immunophenotypic and genotypic studies is gaining respect in providing an accurate diagnosis of malignant lymphoma in selected risk patients [11].

In this study, we aimed to study the utility of FNAC in diagnosing various cytological types in lymphadenopathy, percentage of these types in our study and age and gender distribution of patients of lymphadenitis.

II. Material and Methods

This study was carried out on patients of Cytology section of Department of Pathology from December 2017 to April 2018. A total of 70 subjects (both male and females) were included in this study.

Study Design: retrospective study of patients with lymphadenopathy

Study Location: This was a rural tertiary care teaching hospital based study done in Department of Pathology, at Pt. JawaharLal Nehru Govt. Medical College, Chamba, Himachal Pradesh (India)

Study Duration December 2017 to April 2018

Sample size: 70 patients.

Subjects & selection method: .We received patients in cytology section with lymph node swellings from medicine, surgery ,ent, skin, gynecology department. After proper history taking and clinical examination, we performed FNAC from appropriate site. Adequate amount of material was aspirated , and smears were prepared, fixed and stained with Giemsa stain. Around 1-2ml fluid was sent for CB-NAAT and ZN staining for suspected TB cases. Patients whose material was inadequate from lymph node swelling for CB-NAAT, we asked them to get their sputum tested for AFB and further for CB-NAAT testing.

Inclusion criteria:

- 1.All patients with lymphadenopathy including male and female, of all ages.
- 2.Patients with lymph node swelling >1cm.

Exclusion criteria:

- 1..Non- cooperative patients .
- 2.Patients not giving consent for FNAC
- 3.Patients with lymph node swelling <1cm.

Procedure methodology

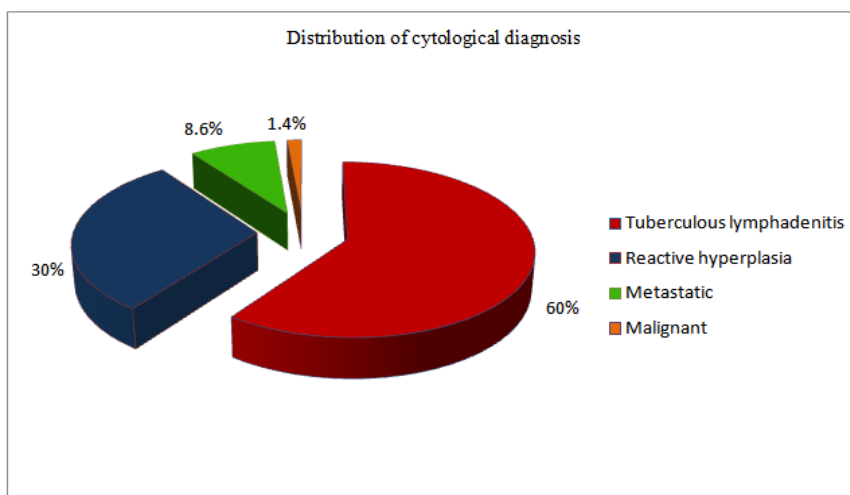
After proper history taking and clinical examination, we performed FNAC from appropriate site. Adequate amount of material was aspirated, and smears were prepared, fixed and stained with Giemsa stain. Around 1-2ml fluid was sent for CB-NAAT and ZN staining for suspected TB cases. Patients whose material was inadequate from lymph node swelling for CB-NAAT, we asked them to get their sputum tested for AFB and further for CB-NAAT testing.

Statistical analysis

Data was statistically analysed with the help of appropriate statistical software MS-EXCEL.

III. Result

Graph 1 – Distribution of cytological diagnosis



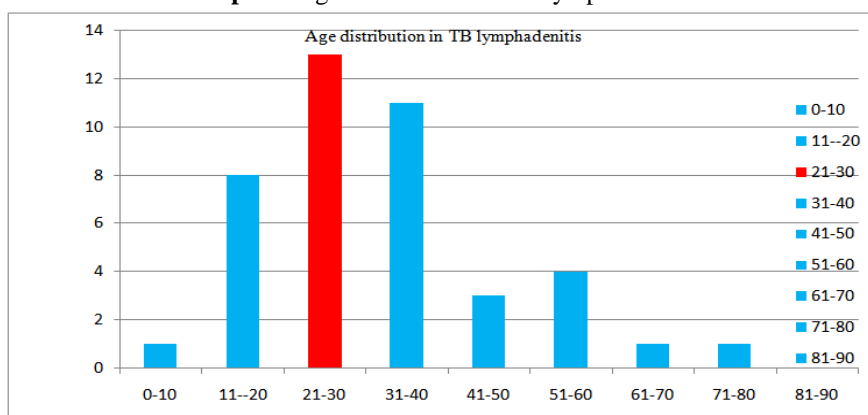
Graph 1 shows distribution of cytological diagnosis in lymph node swellings. Tuberculous lymphadenitis shows 42 cases (60%), followed by reactive lymphadenitis with 21 cases (30%), then 6 cases of metastatic pathology (8.6%) followed by 1 case of malignant pathology (1.4%).

Table 1- Cytological patterns in tuberculous lymphadenitis

S.no	Type	Number of cases
1.	Epithelioid granulomas with necrosis (Type 1)	22 (52.4%)
2.	Epithelioid granulomas without necrosis (Type 2)	17 (40.5%)
3.	Only necrosis without granuloma (Type 3)	1 (2.4%)
4.	Neutrophils with necrosis (Type 4)	2 (4.8%)

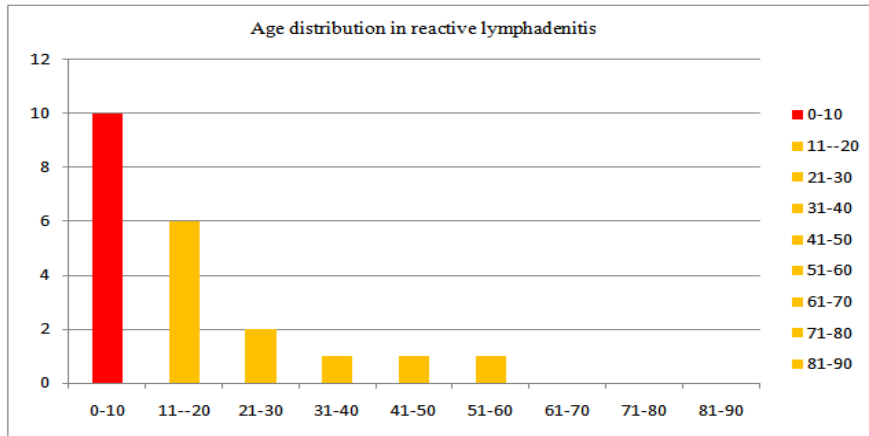
Table 1 shows distribution of lymph node swelling according to cytological patterns in tuberculous lymphadenitis. Type 1 pattern shows maximum no. of cases i.e 22 followed by Type 2 pattern with 17 cases, then 1 case of Type 3 and 2 cases of Type 4 pattern.

Graph 2- Age distribution in TB lymphadenitis



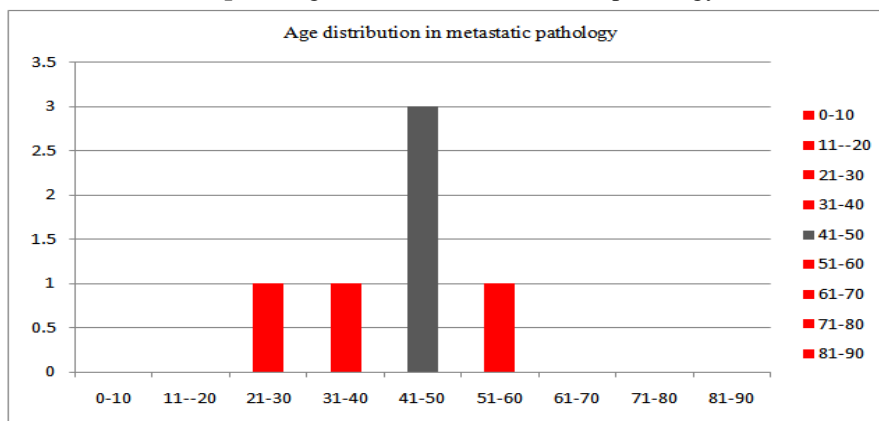
Graph 2 shows age distribution in TB lymphadenitis. Maximum no. of cases are seen in 21-30 age group (13), followed by 31-40 with 11 cases, 11-20 age group (8 cases), 51-60 age group with 4 cases, then age groups 0-10, 61-70, 71-80 with 1 case each.

Graph 3- Age distribution in reactive lymphadenitis



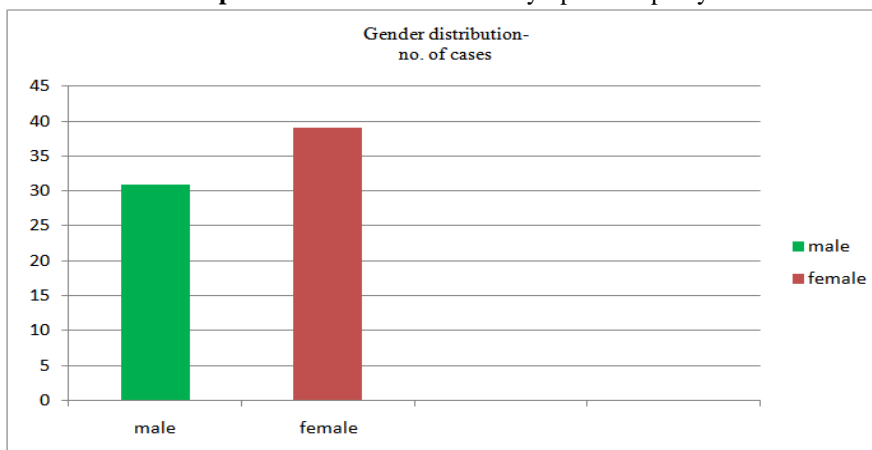
In graph no. 3, age group 0-10 shows maximum no. of cases i.e 10, followed by 11-20 with 6 cases, then 21-30 with 2 cases, and age groups 31-40, 41-50, 51-60 show 1 case each.

Graph 4- Age distribution in metastatic pathology



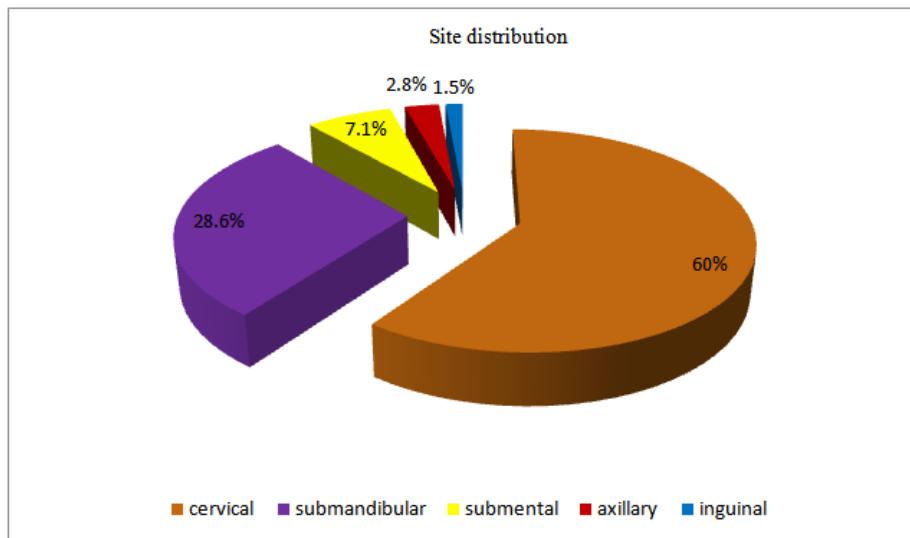
Graph 4 shows age distribution in involved metastatic lymph node swelling. Age group 41-50 shows maximum no. of cases i.e 3, followed by age groups 21-30, 31-40 and 51-60 and remaining age groups do not show any cases.

Graph 5-Gender distribution in lymphadenopathy



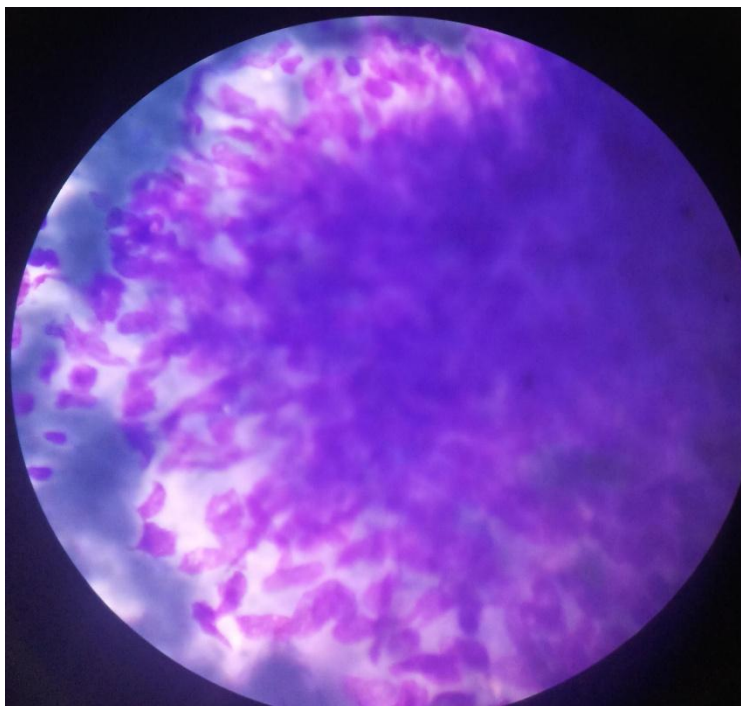
Graph 5 shows gender distribution of lymph node swelling. Females form 39 cases while males form remaining 31 cases of total.

Graph 6- Site distribution in lymphadenitis

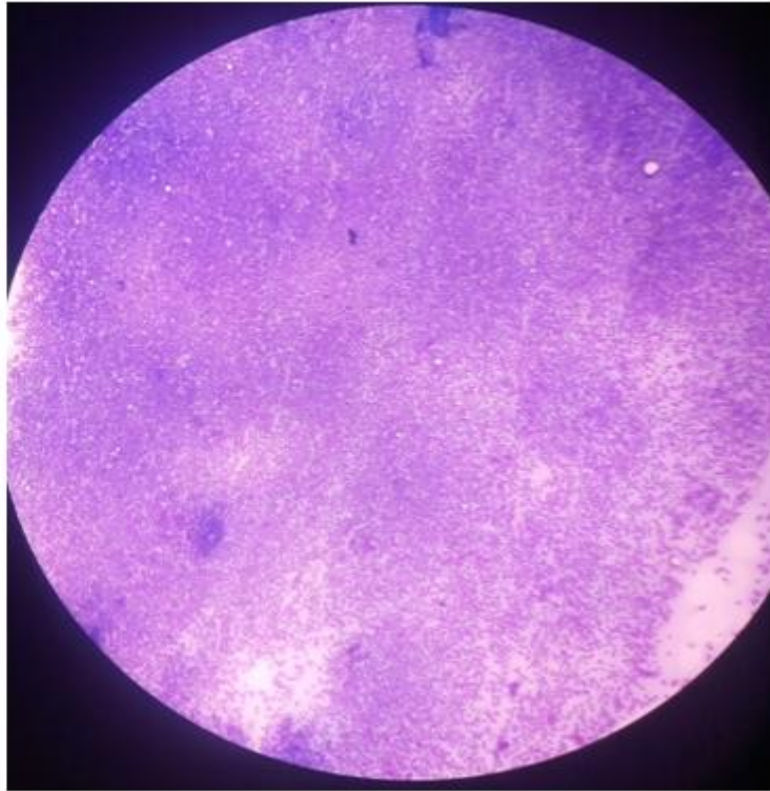


As can be seen in the graph, cervical lymph nodes show 42 involved cases (60%), followed by submandibular nodes 20 cases (28.6%), submental nodes with 5 cases (7.1%), axillary nodes with 2 (2.8%), and inguinal nodes -1 case (1.5%). A total of 15 patients had multiple lymph node swellings.

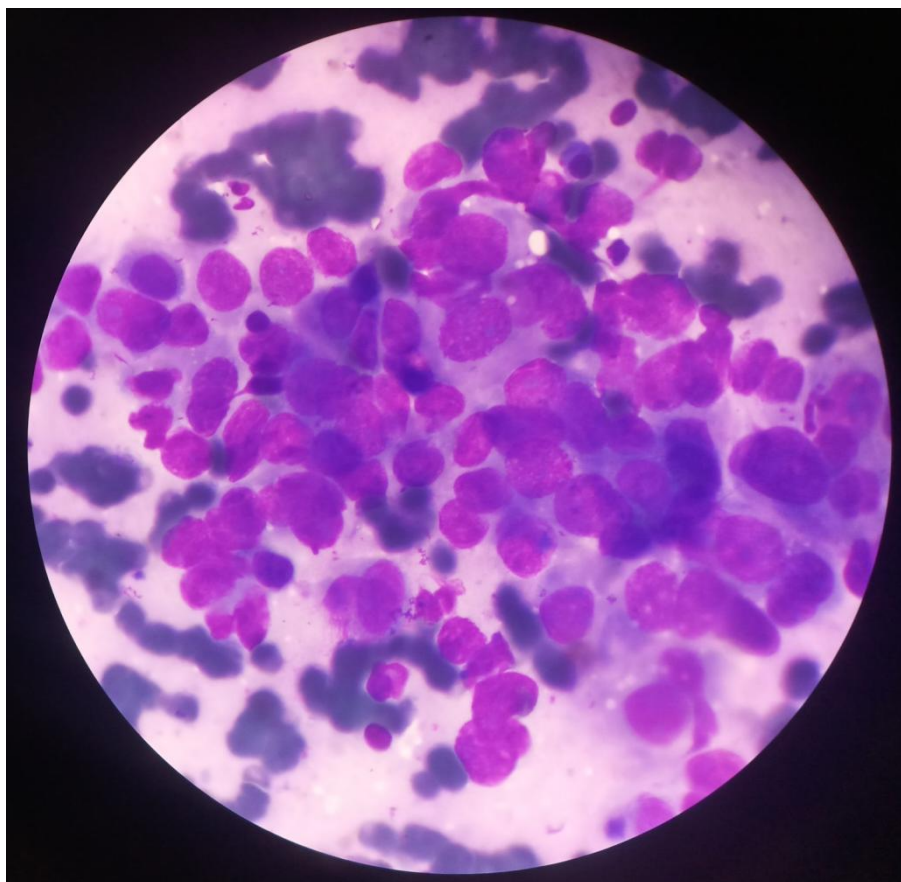
IV. Microphotographs



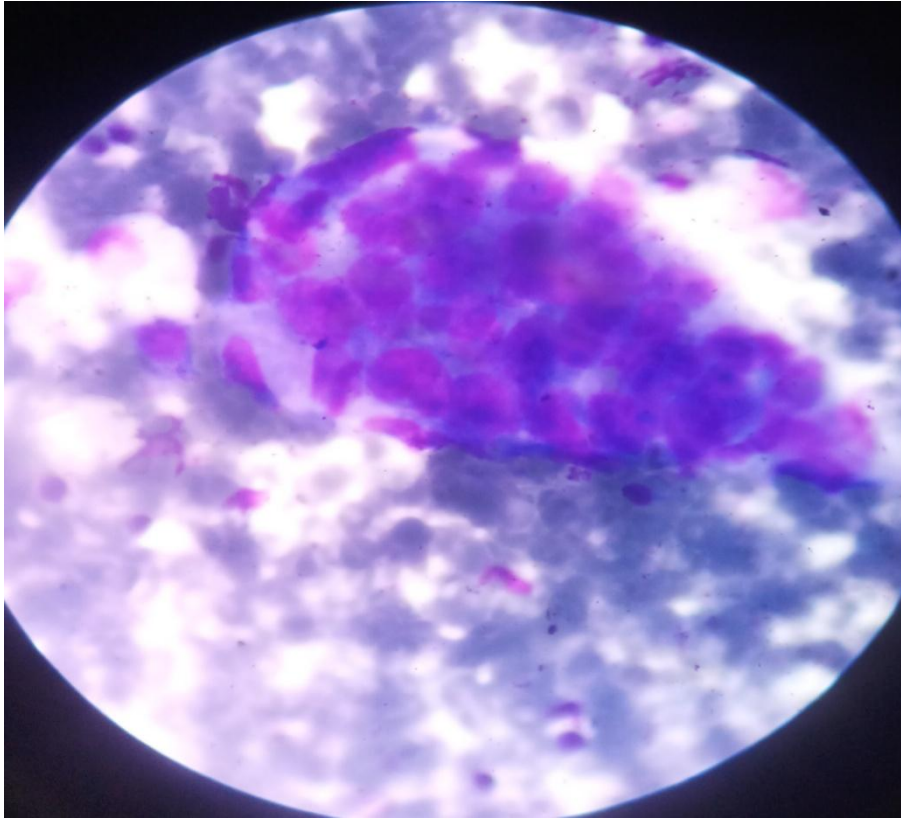
Granulomatous lymphadenitis in cervical lymph node swelling. Giemsa stained smear 100X



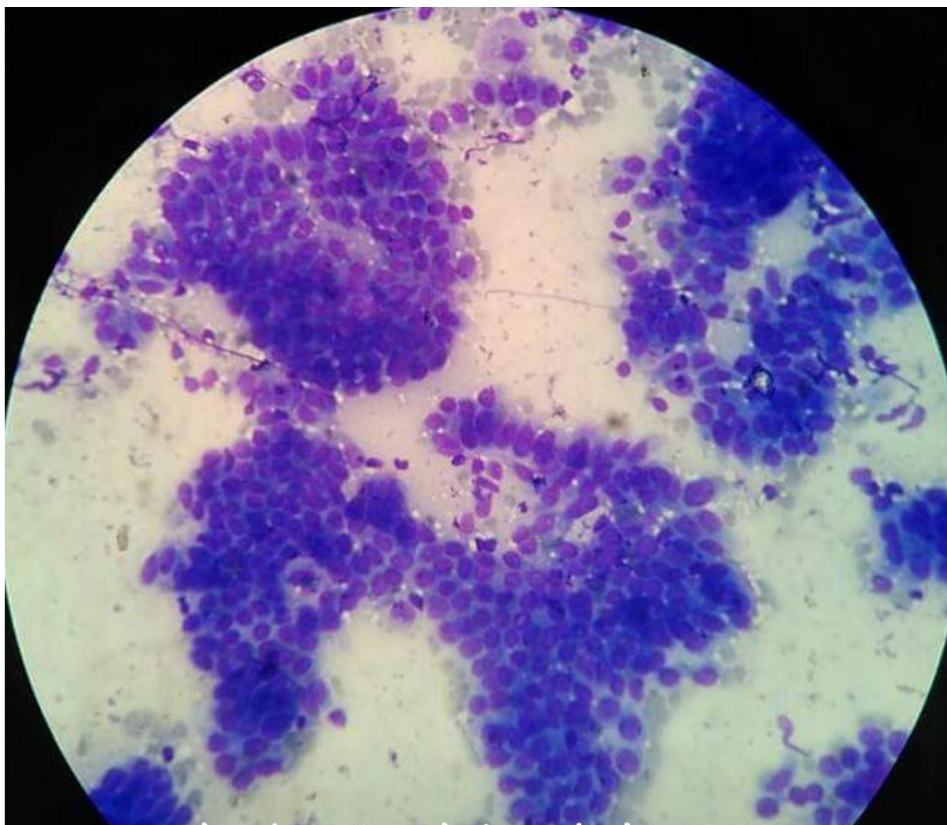
Reactive Lymphadenitis in submandibular lymph node. Giemsa stain smear 100X



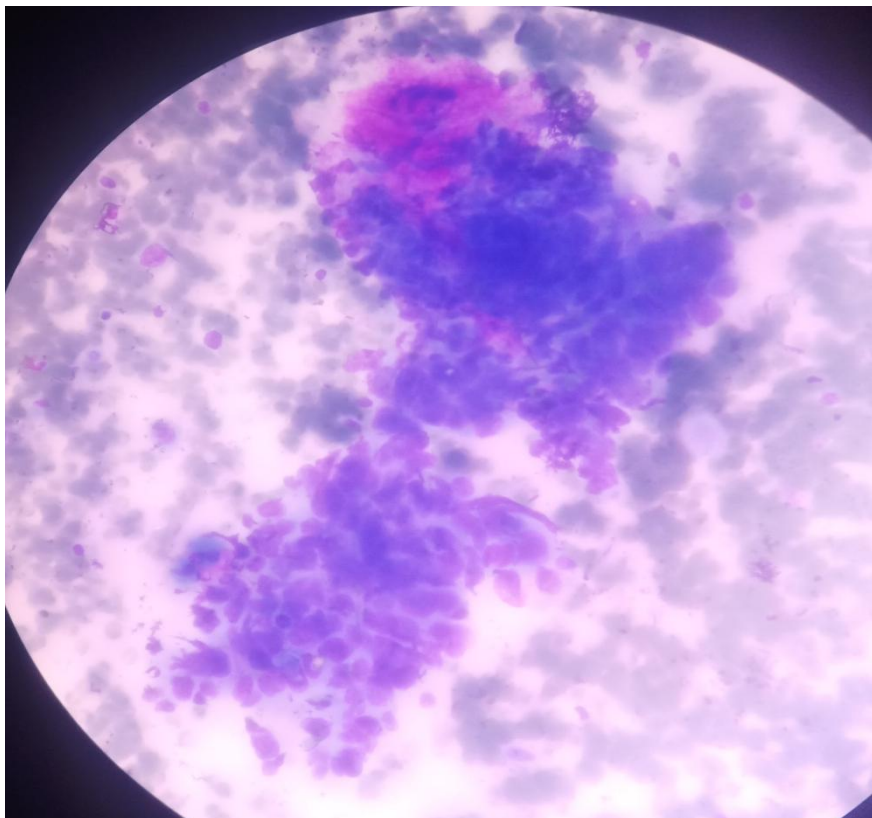
Metastatic deposits in axillary lymphadenopathy. Giemsa stained smear 1000 X



Metastatic pathology in cervical lymph node (probably adeno carcinoma) on giemsa stained smear 1000 X



Metastatic carcinoma (probably papillary ca thyroid) in cervical lymphadenopathy on giemsa stained smear 100 X



Metastatic carcinoma (probably SCC) in cervical lymphadenopathy on giemsa stained smear 100 X.

V. Discussion

We had a total of 70 patients of lymphadenopathy in our study. Females outnumbered males according to present study. Male to female ratio was 1:1.26. Rajsekran S¹² et al and Ahmad SS¹³ et al also had similar findings in their studies reporting M:F ratio in favor of females. On the contrary, Gadre¹⁴ et al and Natraj¹⁵ et al showed higher number of male patients in their studies.

Tuberculosis is still rampant in India, especially in rural area like ours. . Therefore, proper follow up of these patients is the need of the hour to ensure administration of complete ATT course, so that percentage of defaulters is reduced, and eradication of tuberculosis is achieved. There is also a need to create awareness about TB and educate the community about measures to prevent Tb, significance of diagnosis and treatment. We reported quite a high incidence of TB lymphadenitis in our study i.e 60%, similar to study done by Kumar H¹⁶ et al, who also showed highest percentage of TB lymphadenitis out of all other cases (47.67%) in their study. Chawla N¹⁷ et al also showed highest no. of cases of TB lymphadenitis (95 cases) amongst other lesions. Dasgupta¹⁸ et al also showed high incidence of TB lymphadenitis in their study similar to our study.

The incidence of TB was found to be higher in females than males in our study. There were 26 females and 16 male patients diagnosed with tubercular lymphadenitis. There may be many reasons for higher prevalence of TB in females. Firstly, females in rural areas are malnourished and have a low immunity, thus are vulnerable to infectious diseases like TB. Also, females remain restricted to indoor houses which are not properly ventilated and they are not exposed to fresh air, helping the TB bacilli to grow. Overcrowding, poor sanitation, and poor personal hygiene in females also may be contributory factors.

The present study showed cervical lymph node to be the most commonly involved (60.6%), followed by submandibular lymphnode (28.6%). Inguinal lymph node was the least commonly involved (1.5%). Study done by Vimal S¹⁹ et al also had similar findings, as in their study, cervical lymph node had highest no. of cases (50.8%), followed by submandibular node. Inguinal lymph node had least no. of involved cases.

As seen in our study, epithelioid granuloma with necrosis was most common pattern forming 52.4%, epithelioid granuloma without necrosis was next common cyto pattern, forming 40.5%. Similar study was done in the past. AS Malhotra²⁰ et al also had similar observations. According to their study, epithelioid granuloma with necrosis had highest incidence with 47 cases (45.63%), followed by epithelioid granuloma without necrosis with 29 cases (28.16%).

Our study showed that in cases of TB lymphadenitis, age group 21-30 had highest number of cases, i.e 13 followed closely by 31-40 age group with 11 cases. Our study matches with study by C. Bhavani²¹, who also showed maximum no. of cases in 21-40 yr age group.

In present study, in reactive lymphadenitis cases, 0-10 yr age group had highest no. of cases i.e 10, followed by 11-20 age group with 6 cases. C.Bhavani²¹ et al also showed in their study, 0-20 yr age group had highest no. of cases, similar to our study.

We had highest incidence of cases of metastatic malignancy in 41-50 yr age group, similar to study by C. Bhavani²¹, who also showed highest number of cases of metastatic pathology in the age group 41-50.

Non Hodgkin lymphoma usually occurs in old patients. Likewise we reported 1 case of Non Hodgkin Lymphoma in our study, which was a male patient in 71-80 year age group.

VI. Conclusion

Despite its limitations and pitfalls, FNAC appears as a good first line method for investigating the cases of lymphadenopathy. It can be concluded from our study, that tuberculous lymphadenitis shows high burden of cases in our community. Reactive lymphadenitis is commonly seen in lymphadenopathy, usually in first and second decade of life, on cytology.

Also, FNAC is a useful, initial diagnostic test which can obviate the need of surgery, in cases of clinically suspicious malignant cases. FNAC is quite helpful in finding metastatic pathology in lymph node swelling, and can also point at primary site based on cytological picture.

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