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Spectrum of cytomorphological patterns of lymph node lesions on FNAC

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Abstract
Introduction: Lymph nodes are an important part of immune system. Their enlargement is noted in a wide spectrum of diseases, including infections and malignancy. Peripheral lymphadenopathy is common in all age groups and management of cases depends on lymph node pathology, which can be studied by collecting material through fine-needle aspiration or excision biopsy.
Objectives: The study was undertaken to assess the cytomorphological features and incidence of various lymph node diseases on fine-needle aspiration cytology (FNAC) and to analyze the utility and diagnostic importance of FNAC in lymph node diseases.
Materials and Methods: In the study total of 150 patients were selected who had presented with lymph node enlargement at Department of Pathology, KVG Medical College.
Results: Reactive lymphoid lesions comprised the majority (33.69%) followed by tubercular lymphadenitis, metastatic malignancies, acute suppurative lymphadenitis, and lymphomas, respectively.
Conclusion: Granulomatous lymphadenitis were the most common among the lymph node swellings presentations. FNAC is a simple, safe, reliable, and inexpensive method in early detection of lymph node lesions, which has been proven once again in this study.

Keywords: spectrum, cytomorphological, patter lymph node, FNAC

Introduction

Fine needle aspiration cytology (FNAC) as the first line of investigation has assumed importance in diagnosing a variety of disease processes as it is rapid, simple, reliable, minimally invasive, and cost-effective procedure which can be used in outpatient setting [1].

FNAC has an important role in the evaluation of peripheral lymphadenopathy, and it can be used as a safe alternative to excision biopsy [2].

It can easily differentiate between non-neoplastic and neoplastic lesions [3]. Lymphadenopathy is one of the most common clinical presentations with variable etiologies and is one of the major cause of morbidity [4]. The knowledge of the pattern of lymphadenopathy in a given geographical region is essential for making a confident diagnosis or suspecting a disease [5] this study aims to identify the common causes of lymphadenopathy.

Materials and Methods

A prospective study of 150 cases of lymphadenopathy presenting to the Department of Pathology for 2 year from May 2017 to May 2019 was taken up for this study. FNAC was performed using a 22–24-gauge needle and 10 ml syringe. In cases where fluid was aspirated on FNAC, the fluid was centrifuged and smears were made from the sediment followed by staining methods. Two of the prepared smears were fixed in alcohol and stained with hematoxylin and eosin and Papanicolaou stain. Two smears were air-dried, one was stained with Leishman stain and the other kept unstained to be used for Ziehl–Neelsen (ZN) staining whenever a cytological diagnosis of granulomatous disease was made and also in cases with abundant necrosis and suppuration.

Result

A total of 150 cases were studied and the patient age ranges from 5 years to 75 years. The maximum incidence of cases among benign cases were seen in the 21-30 year age group and among malignant cases were seen in 61-70 years. A slight female preponderance with a male: female ratio of 1:1.4 was observed.

Table 1: Age distribution

	Reactive	Suppurative	Granulomatous	NHL	Metastasis
0-10	2	0	0	0	0
11-20	13	2	3	0	0
21-30	7	5	26	0	0
31-40	4	3	14	0	2
41-50	2	0	5	3	7
51-60	2	0	3	0	12
61-70	2	0	2	2	15
71-80	0	0	0	3	9

Table 2: Sex distribution

	Reactive	Suppurative	Granulomatous	NHL	Metastasis
Male	11	2	17	5	29
Female	21	8	36	3	15

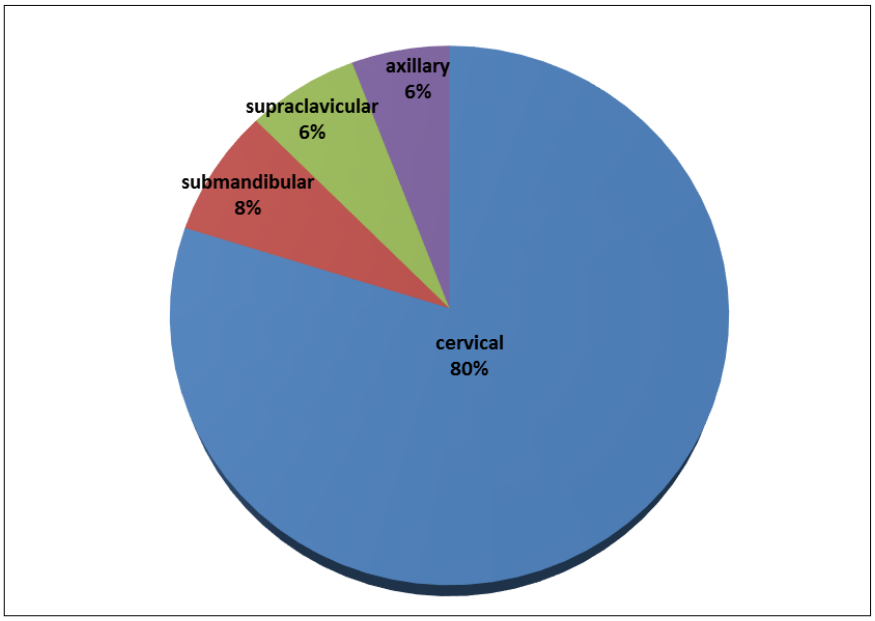

Fig 1: Lymph Node Involved

The most common lymph node involved was cervical. The diagnosis was benign in 65% of cases and malignant in 35% of cases.The etiologies of lymphadenopathy in decreasing order are granulomatous lymphadenitis (35.3 %), metastasis to lymph node (29.3 %), reactive lymphadenitis (21.3 %), suppurative lymphadenitis (6.7 %), Non hodgkins lymphoma (5.3%) and hodgkins lymphoma (2%).
The majority of cases were granulomatous lymphadenitis of which 95 % was seen in the cervical group of lymph nodes.

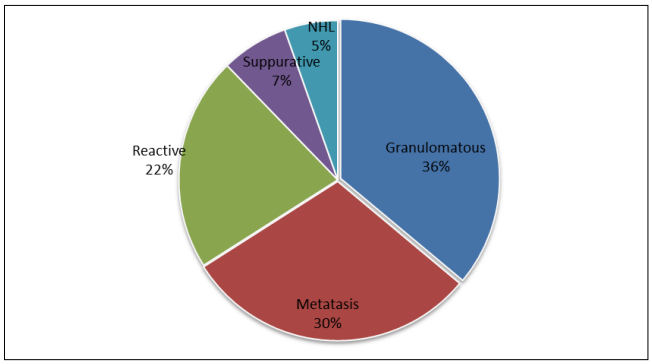

Fig 2: Causes of Lymphadenopathy

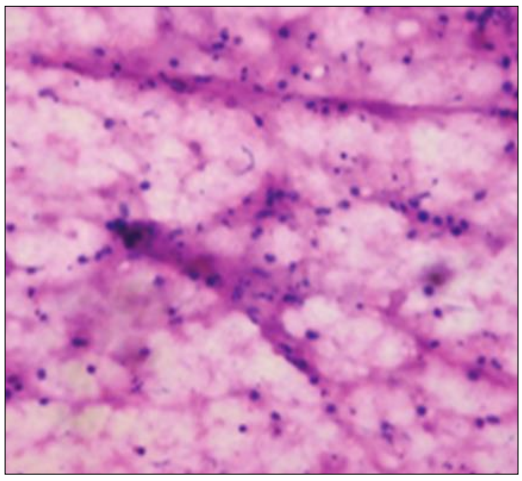

Fig 3: Suppurative Lymphadenitis

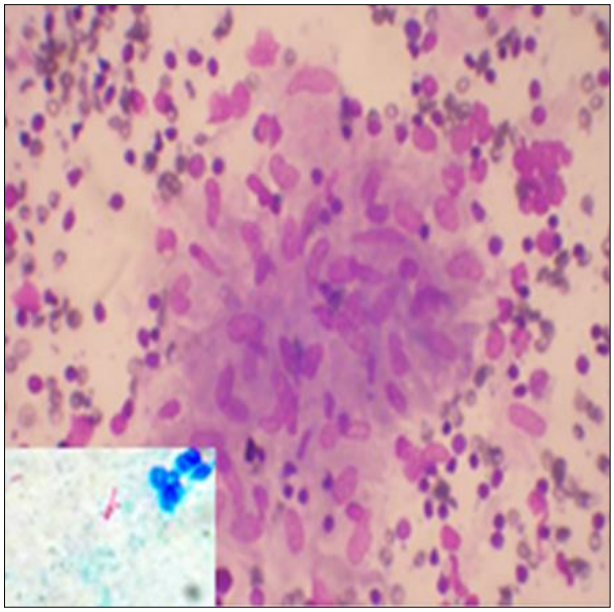

Fig 4: Granulomatous Lymphadenitis (Inset- Acid fast Bacilli)

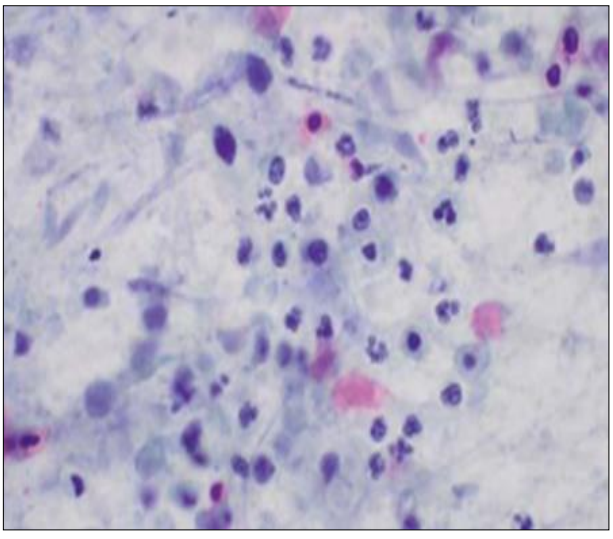

Fig 5: Squamous cell Carcinoma Metastasis

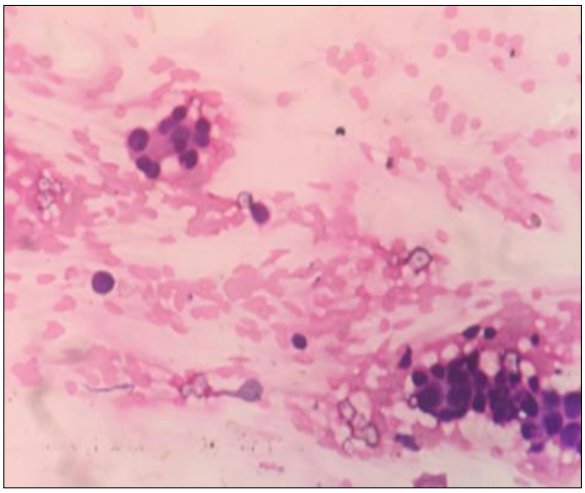

Fig 6: Adenocarcinoma Metastasis

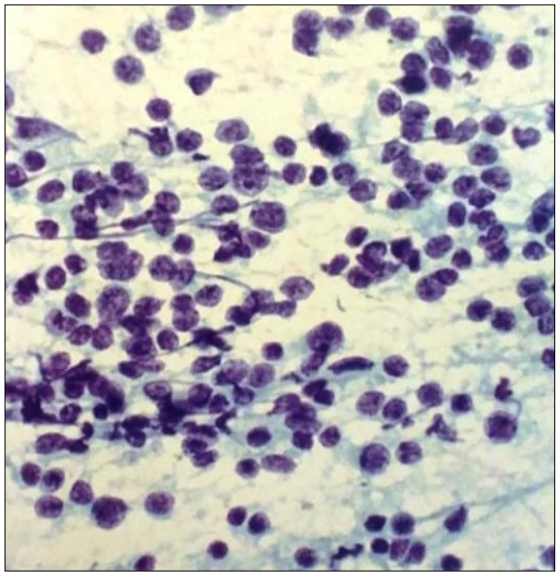

Fig 7: Nonhodgkin Lymphoma

- Twelve cases among the 53 granulomatous lymphadenitis cases were found to be AFB positive (28.1%). Majority of the malignant diagnosis was due to metastasis.A total of 34 cases of metastasis to lymph nodes were seen. Majority of the cases were in cervical group of lymph nodes (79.4%).Maximum number of cases were squamous cell carcinoma deposits (91.2%). The reactive lymph nodes comprised 21.3% of the total cases studied, out of which majority were cervical lymph nodes. The submandibular lymph nodes were involved in most of the cases of suppurative lymphadenitis. The smears showed both well-preserved and degenerated neutrophils and cell debris. There were total 8 cases (5.3%) of lymphomas out of which 2 cases were hodgkins's lymphoma. The six cases of Non Hodgkin lymphoma cases presented with cervical lymphadenopathy(4), inguinal lymphadenopathy(1) and axillary lymphadenopathy(1)

Discussion

In developing countries like India tuberculosis, acute upper respiratory tract infections and suppurative lymphadenitis are some of the common causes of lymphadenopathy [6]. In our study maximum patients were in the age group of 21-30 years. The age group in our study was similar to studies done by Badge SA et al [7] and Chandanwale et al [8].

Table 3

	Present Study	Badge SA et al	Chandanwale et al
Age Group	21-30	21-30	21-60
Lymph Node	cervical	Cervical	cervical

The maximum number of cases in our study were granulomatous lymphadenitis. This finding was similar to studies done by Badge SA et al [7], Kajuria S et al [5].

Table 4

	Reactive	Granulomatous	Suppurative	Lymphoma	Metastasis
Present	21.3	35.3	6.7	7.3	29.3
Badge SA et	8.06	80	3.86	0.96	3.87
Vimal S et al	33.69	28.09	5.88	2.67	17.61
Kajuria S et al	37.7	52.3	1	2	3.8

Cervical lymph nodes were the most common group of lymph nodes involved which was similar to that observed by Hirachand et al [9], and Chandanwale et al [8]. Among the malignant diagnosis, metastasis was predominant similar to studies done by Bagwan IN et al [10], Alam K et al [11].

Most of the metastatic deposits (88.5%) were from squamous cell carcinoma and our findings correlated with the studies by Vimal S et al [6] Hemalatha *et al*. [12] (60%) and Patel *et al.* [13] (75.5%). Twelve cases among the 53 granulomatous lymphadenitis cases were found to be AFB positive (28.1%). Ng *et al*. [14] reported positivity in 41.6% cases and Ahmed *et al*. [15] in 46% cases.

The high incidence of squamous cell carcinomas in our study can be attributed to the high incidence of tobacco chewing and head and neck cancers in our region. Reactive lymphadenopathy was the third most common cause and seen in 21.3 % cases in accordance with Khan et al [16]. (28%) Lymphomas constituted only 8.3 % cases in our study. This was in accordance with the study by Biswas et al [17]. (6.3%).

Conclusion

FNAC of lymph nodes is a simple and cost effective method to determine the nature of lymph node lesion. This study highlighted the various etiologies of lymphadenopathy and revealed higher incidence of granulomatous lymphadenitis in this region.

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