Original Article

DOI: 10.21276/APALM.1935

Diagnostic Evaluation of Cervical Lymphadenopathy in FNAC Samples – Case Based Study in A Rural Tertiary Care Hospital

Volga Harikrishnan*, SulochanaSonti andf Chitra Srinivasan

Department of Pathology, Saveetha Medical College, Saveetha Nagar, Thandalam, Chennai 602105, Tamilnadu, India.

ABSTRACT

Background: Nowadays lymphadenopathy is a common clinical problem and it may be in a form of localized, limited, or generalized. Cervical lymphadenopathy can be due to infections, malignancies, autoimmune disorders and other miscellaneous conditions. To diagnose lymphadenopathy in a short time, a simple, cost-effective outpatient procedure Fine needle aspiration cytology (FNAC) is necessary. FNAC is an accurate procedure to diagnose lymphadenopathy cases. The purpose of the study was to evaluate the results of FNAC of nodes especially cervical lymphnodes in our institution.

Methods: A retrospective analysis of cervical lymphadenopathy cases reported by FNAC procedure over the period of six months in Department of Pathology. Smears were stained with four different stains including Hematoxylin and Eosin stain, Papaniculaou stain and Giemsa stain.In suspected cases of Tuberculosis special stain like Ziehl-neelsen were performed

Result: In this study age of the patient varied between 1 to 70 years. Most of the cases were benign in which reactive lymphoid hyperplasia was the leading one. The remaining cases were metastatic carcinoma which includes poorly differentiated carcinoma with unknown primary, squamous cell carcinoma (SCC) (Primary from carcinoma cervix,cheek and tongue), adenocarcinoma (Primary from lung and gastrointestinal tract) and an interesting case of follicular neoplasm of thyroid.

Conclusion: Cytology has a high efficacy of diagnosis in patients with cervical lymphadenopathy. It also has the advantage of being able to predict the primary site (where origin of the tumor is unknown) in many cases. It should be considered as an important component of preoperative/pretreatment diagnosis.

Keywords: *Cervical Lymphnode,FNAC, Reactive,Granuloma,Metastasis.*

Introduction

Nowadays FNAC is considered as a valuable diagnostic tool and it is a simple, rapid and cost effective diagnostic technique associated with minimal trauma and complication. [1]

One of the commonest presentations of the patients in clinical setting is lymph node enlargement. Lymph nodes in head and neck region form the groups and these groups are responsible for draining lymphatic fluid from different regions in head and neck. Cervical lymphadenopathy is defined as enlargement of node of more than 1 cm in diameter. FNAC is performed routinely in the diagnosis of superficially detectable or palpable swelling especially in the diagnosis of cervical lymphadenopathy in adults. But in pediatric patients, FNAC is not always used as a routine diagnostic procedure. For confirmation of malignancy or any suspicious lesions in cervical lymphadenopathy surgical excision with histopathological examination is the gold standard procedure. [2][3]

Differential diagnosis of the lymph node, however, is still a diagnostic problem. So pathological examination like FNAC or histopathological examination is mandatory for a definitive diagnosis and treatment.

The present study was undertaken to evaluate the cervical lymphadenopathy cases in FNAC samples with different cytomorphological patterns in our hospital set up.

Materials And Methodology

A retrospective study was undertaken in our hospital from the Department of Pathology. Study duration was six months from July 2015 to December 2015. A total of 732 FNAC s were done over this period, out of which 84 from lymphnode. Out of 84 cases, in 51 cases FNAC performed from cervical lymphnodes, so patients with cervical lymphnode were included in our study.

Aspiration of lymph nodes was done under aseptic precautions using 22-23-gauge needle fitted to 5-ml syringe. The reliability, limitations, and complications of the procedure were explained to the patient. Following the aspiration, the quantity and nature of the aspirated material was examined and several smears were prepared. Precaution was taken to minimize cell damage and preserve cell distribution.

Smears were immediately fixed by air drying or in 100% alcohol, followed by four different stains including

Hematoxylin and Eosin stain, Papaniculaou stain and Giemsa stain. In suspected Tuberculosis cases, special stain like Ziehl-neelsen were performed.

Result

A total of 732 FNAC s performed over the period of six months (July to December 2015). Out of which 84 (11.47%) cases had taken from lymphnodes, cervical lymphnode FNAC was done in 51(60.71%) patients.

Age of the patient varied between 1 to 70 years. Maximum numbers of patients were below 21-30 years age group (Table 1).

Granulomatous inflammation cases are recognised cytologically by seeing aggregates of histiocytes (Epithelioid cells) (Figure 2). A dirty necrotic background would suggest caseation (Figure: 3) and possibly tuberculosis (Necrotizing granulomatous lymphadenitis).

Ziehl-neelsen stain was performed in necrotizing granulomatous cases, out of 16 cases 2 (12.5%) cases showed positive acid fast bacilli. Positive Acid Fast Bacilli (Pink rod shaped bacteria) shown in (Figure: 4)

Among 9 cases of metastatic carcinoma, 3 were poorly differentiated carcinoma with unknown primary, three were squamous cell carcinoma (SCC) (Primary from carcinoma cervix, cheek and tongue) and two cases were adenocarcinoma (Primary from lung and gastrointestinal tract) and the remaining one case from follicular neoplasm of thyroid.

Aspirates from lymph node in cases with metastatic SCC showed cells having dense, eosinophilic cytoplasm and hyperchromatic, irregular nuclei. Adenocarcinoma was characterized by presence of pleomorphic cells arranged singly, in dyscohesive clusters and acini with central lumina(Fig 5).Metastasis from follicular neoplasm of the thyroid showing repeated microfollicles (Fig 6)

Discussion

FNAC is a fast, cost effective method and is routinely done to aspirate material from superficially palpable lumps like those found in the neck.FNAC may be a helpful procedure in the diagnosis of both neoplastic and non-neoplastic lesion of lymph nodes before the surgical intervention.[4]

By this method, samples are obtained through a fine needle by giving negative pressure. The overall yield of FNA is enhanced with image guidance. The most common approach is to use ultrasonography; however, CT guidance is commonly used. [5]

Table 1: Distribution of cases in various age groups:

Age in years	Number of Cases	Percentage (%)
1-10	5	9.8
11-20	9	17.6
21-30	13	25.5
31-40	9	17.6
41-50	6	11.8
51-60	5	9.8
61-70	4	7.8

Females are more common than males; the male female ratio was 1:1.3. (Table 2)

Table 2: Sex distribution.

Male	Female
22 (43.1%)	29 (56.9%)

In 51 cases, 42 constituted benign lesion amounting to 82.35% cases, 9 (17.65%) cases were of metastasis. Distribution of cases by aetiology shown in Table 3

Table 3: Distribution of cases by aetiology.

FNAC Diagnosis	Number of cases	Percentage (%)
Reactive lymphadenitis	17	33.33
Suppurative inflammation	09	17.65
Necrotizing granulomatous inflammation	16	31.37
Malignancy	09	17.65

Among 42 benign cases, Reactive lymphadenitis were 33.33 %(Figure: 1); Granulomatous inflammation was 31.37%; Suppurative inflammation cases were 17.65%.

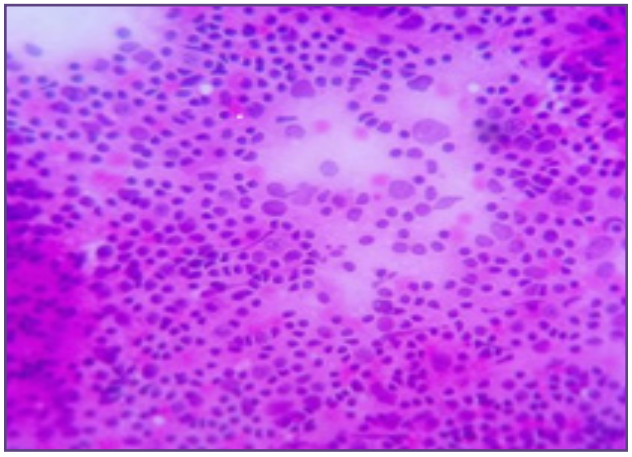

Fig. 1: Photomicrograph showing reactive lymphoid hyperplasia with mature lymphocytes and tangible body macrophages (H & E stain, 10x).

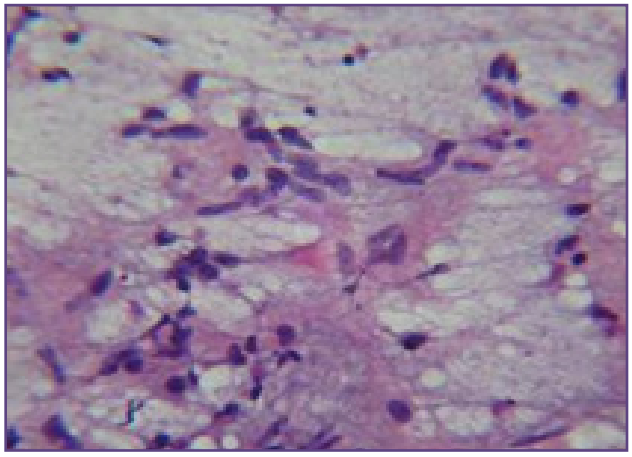

Fig. 2: Photomicrograph showing ill formed granulomas composed of epithelioid cells (H & E, 40X).

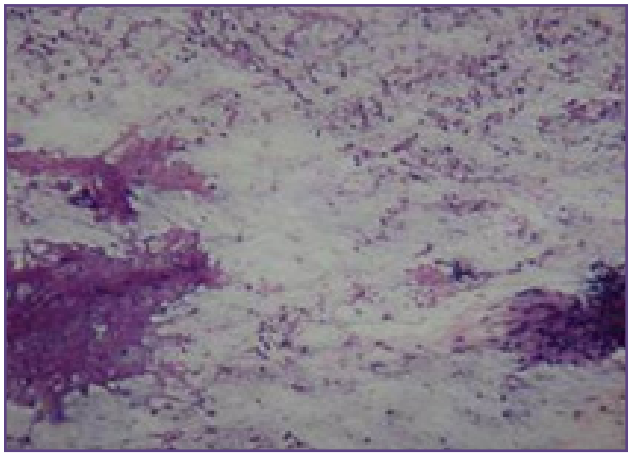

Fig. 3: Photomicrograph showing granuloma with eosinophilic amorphous material(caseation necrosis)(H & E stain, 10x).

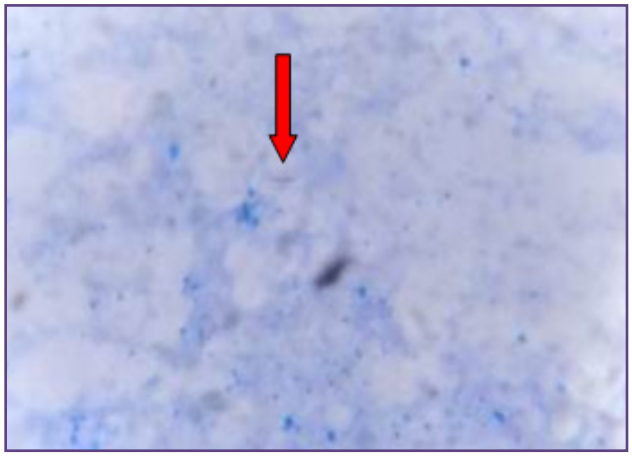

Fig. 4: Photomicrograph showing rod shaped acid fast bacilli (arrow) (ZN stain, 100x).

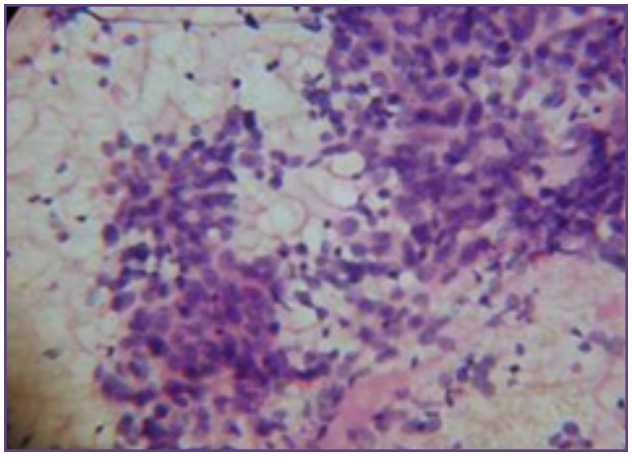

Fig. 5: Photomicrograph showing pleomorphic cells in dyscohesive clusters (Adenocarcinomatous deposits) (H & E stain, 10x)

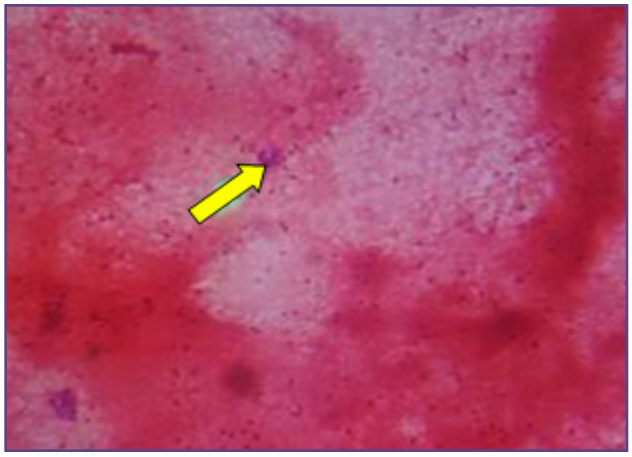

Fig. 6: Photomicrograph showing few microfollicles in an haemorrhagic background (Follicular neoplasm thyroid metastasis in a lymphnode) (H & E stain, 10x)

Lymphadenopathy is not only increasing in size but also shows varying consistency (Soft/firm/hard) of lymph nodes. It is one of the clinical manifestation serves as an excellent clue to the underlying disease. Cervical lymph node enlargement is one of the nonspecific findings or sometimes it may be the only finding for diagnosis. Evaluation of lymphadenopathy leads to the diagnosis of lymphoma, acquired immunodeficiency syndrome, or metastatic cancer.

Lymphadenopathy is classified into "generalized" (Enlargement of lymph nodes in two or more noncontiguous areas) or "localized" (Enlargement of lymph nodes in one area). By evaluating localized and generalized lymphadenopathy we can formulate much differential diagnosis. [6]

A study conducted by Maria [7] et al also reported reactive hyperplasia in 70 % cases, granulomatous lesion in 14 % cases and malignancy in 12 % cases. In our study also the most common cause of lymphadenopathy is due to reactive lymphoid hyperplasia.

Cervical lymph node involvement is the most common site for granulomatous inflammation followed by axillary lymph nodes involvement. A study was conducted by Muhammad et all concluded that in their study most common anatomic site is cervical lymph node followed by periauricular lymph nodes.[8],[9]

Granulomatous inflammation diagnosed on FNAC analyzed using ZN (Ziehl Neelson's) stain. Only two cases showed positivity. Low yield of acid fast bacilli is may be due to treatment with ATT and presence of very scanty bacilli in the lymph node. A study conducted in India shows an overall 27% AFB positivity, and the reason for this low AFB sensitivity was given. Studies with higher AFB had adult subjects, in whom open tuberculosis and necrotic lesion were far more common. [9]

Our study showed among malignancy all cases of metastatic involvement of the lymph nodes (100%) rather than lymphomas (0%).The cervical group is the most common group of lymph nodes to be involved and the primary site is most often from the oral cavity with squamous cell carcinoma. [10]

One interesting case was found in our study .It was a case of metastatic squamous cell carcinoma of cervical lymph node from cervix. Carcinoma of the cervix commonly metastasizes by direct local extension or lymphatic spread within the pelvis into the reginal nodes. But we reported unusual manifestation of cervical cancer with cervical lymphnode metastasis. First presentation of this patient was cervical lymphnode enlargement. Then we evaluated for primary and found out the diagnosis of carcinoma cervix, confirmed by cervical smear and biopsy. Metastasis to extrapelvic lymph nodes carries worse prognosis. Similar type of case reported by Madhavi et al.[11]

In our study, one case of follicular neoplasm metastasis into cervical lymphnode and it is very rare. Ghazala et al in their study they found out nodal metastasis from thyoid especially follicular and papillary carcinoma. [12]

Conclusion

In the conclusion, cervical lymph node enlargement is common clinical presentation with variable aetiology ranging from inflammatory to malignancy. Proper examination of lymph node and use of different diagnostic modalities are very important for the exact diagnosis of diseases. One of the investigations is FNAC which has become a most acceptable diagnostic tool especially when it is combined with clinical parameters. In the end, we conclude that cytology has a high efficacy of diagnosis. It also has the advantage of being able to predict the primary site (where origin of the tumor is unknown) in many cases. It should be considered as an important component of preoperative/pretreatment diagnosis, when correlated with other investigations and clinical and radiological features.

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***Corresponding author:**
Dr. Volga Harikrishnan,
Email: drhsvol@gmail.com

Financial or other Competing Interests: None.