

Diagnostic accuracy of Fine needle aspiration cytology in lymphadenopathy – our experience in a tertiary care hospital

Meenakshisundaram K^{1,*}, Rajeswari K², Rajalakshmi V³

¹Associate Professor, ²Assistant Professor, ³Head of the department, Department of Pathology, ESIC Medical College & PGIMSR, KK Nagar, Chennai 600078.

***Corresponding Author:**

E-mail: drkms75@gmail.com

Abstract

Aim and objective: To study the different causes of lymphadenopathy and to document the various causes of enlargement of lymph nodes.

Materials and methods: 294 cases of lymphadenopathy patients were included in this study who visited the pathology department in our medical college hospital from January 2014 to September 2015. For each patient, minimum four smears were made from each site of aspiration and smears are stained with Papanicolaou stain routinely and special stains were used wherever necessary arose.

Results and conclusion: Accuracy of diagnosis was more than 95% in most of the cases and 100% in metastatic diseases. Subtyping of Non Hodgkin lymphoma was not possible as histopathology and Immunohistochemistry are gold standards for these lymphomas.

Key words: FNAC, lymph nodes, metastasis, Hodgkin lymphoma, granuloma.

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Introduction

Fine needle aspiration cytology (FNAC) was initially used to confirm metastatic diseases or local recurrence of cancer. Now it is a useful tool in the clinical investigation for diagnosing not only tumours but also infectious and inflammatory conditions. It is a simple and inexpensive investigatory tool which is routinely used to diagnose preoperatively a variety of neoplastic and non-neoplastic disorders. Lymph node enlargement is very common presenting complaint in day to day practice of medicine. Use of needle aspiration in these cases is helpful in the management of patient.

Aims

1. To study to different causes of lymphadenopathy
2. To documenting cytomorphology of various neoplastic and non neoplastic causes of lymphadenopathy
3. To evaluate the diagnostic accuracy of FNAC of lymph nodes.

Materials and methods

Our study was conducted in the Department of Pathology, ESIC MC & PGIMSR from January 2014 to September 2015 on 294 patients with lymphadenopathy in various regions of the body. Cases were referred from all clinical departments.

The age, sex, site, size, duration were noted and full clinical examination to look out for other node enlargement and hepatosplenomegaly was done in all patients. In 52 patients, where an impression of lymphoproliferative disorder or metastatic deposits were given, subsequent excision biopsies were done. The histopathological findings were compared to the cytological diagnoses in these cases.

The procedure was done using standard 5 ml disposable syringe with 23 guage needle. Two passes were done in all cases and three or four smears were made for each site of aspiration. Individual number was given to a case and alphabets were given if more than one site was aspirated in a single case. Two smears were fixed immediately in isopropyl alcohol and other two were air dried.

Staining: Alcohol fixed smears were stained with Papanicolaou (Pap) stain and Hematoxylin & Eosin (H&E). Air dried smears were stained with Leishman stain and if tuberculosis was suspected the Ziehl Neelson(ZN) stain was done. If fungal infection was suspected smears were stained with Periodic Acid Schiff (PAS) stain.

All stained smears were examined under low power, high power and oil immersion objectives of the microscope. Final impressions given included reactive lymphoid hyperplasia, granulomatous lymphadenitis,

positive for metastatic deposits, suppurative inflammation and lymphoproliferative disorders.

Results

Out of the 294 cases, 152 cases (51.7%) were males and 142 cases (48.3%) were females with male to female ratio 1.1:1. The age of the patients ranged from 3 months to 84 years with maximum cases falling in the range between 21-30 years (60 cases, 20%).

Region wise, FNAC was done in cervical region (250 cases, 85%) including anterior triangle, posterior triangle, submental and supraclavicular region, axilla (18 cases, 6%), inguinal (18 cases, 6%), other sites (8 cases, 3%) like lymphnodes in back and medial aspect of arm.

A final impression of benign lymphadenopathy was given in 216 cases (73%), metastatic deposits in 40 cases (14%) and lymphomas in 18 cases (6%). In twenty cases (7%) the aspirated material was

insufficient to give a definitive impression and hence were non-diagnostic.

Among the benign lymphadenopathy, 88 cases were reactive lymphoid hyperplasia, 104 cases were granulomatous lymphadenitis and 24 cases showed suppurative inflammation. Among the 104 cases of granulomatous lymphadenitis, acid fast bacilli (AFB) was demonstrated by ZN stain in 34 cases.

Among the metastatic deposits the primary tumour was squamous cell carcinoma (23 cases), adenocarcinoma (5 cases), undifferentiated carcinoma (6 cases), papillary carcinoma thyroid (4 cases) and malignant melanoma (2 cases).

Among the lymphoma cases an impression of Hodgkin disease was given in 4 cases and lymphoproliferative disorder suggestive of Non Hodgkin lymphoma was given in 14 cases. All cases underwent excision biopsy and it was confirmed in histopathology and subsequent immunohistochemistry studies.

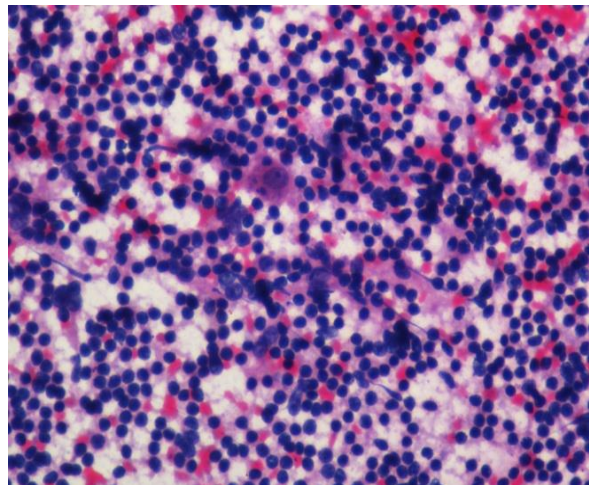


Figure 1: Photomicrograph of lymphnode aspirate with reactive lymphoid hyperplasia showing polymorphous population of lymphoid cells with tingible body macrophages. (Pap x400)

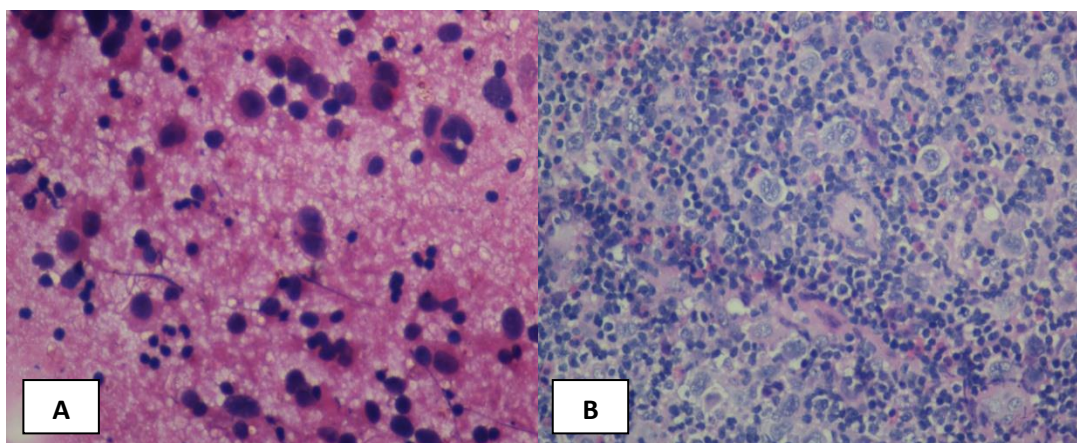


Figure 2: Photomicrograph of lymph node of Hodgkin lymphoma: (A) – aspirate smears showing numerous Reed Sternberg cells characteristic of Hodgkin lymphoma (Pap x 400), (B) – corresponding tissue section showing Reed Sternberg cells surrounded by polymorphous population of eosinophils, lymphocytes and histiocytes. (H&Ex400)

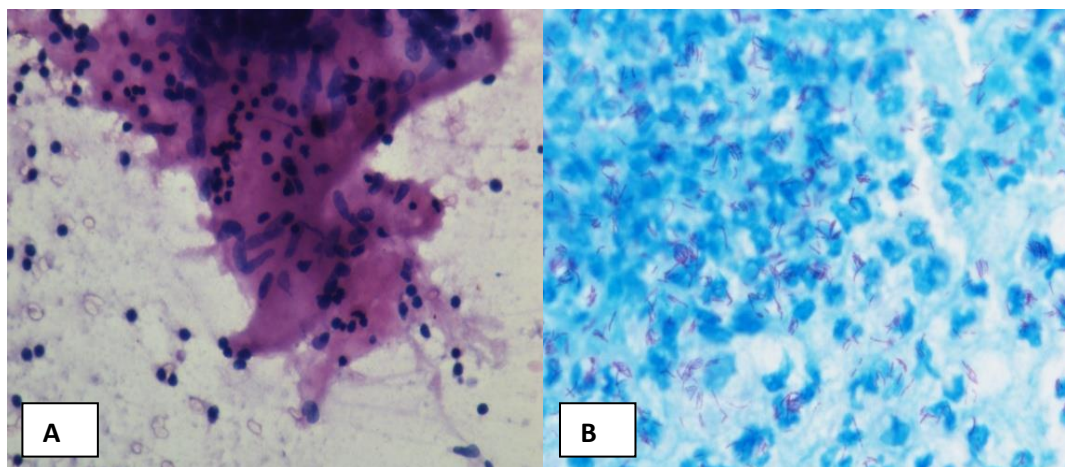


Figure 3 : Photomicrograph of aspirate of lymph node showing cluster of epithelioid cells in a caseous necrotic background of lymphocytes seen in tuberculous lymphadenitis. (Pap x400) and numerous acid fast bacilli. (ZN x1000)

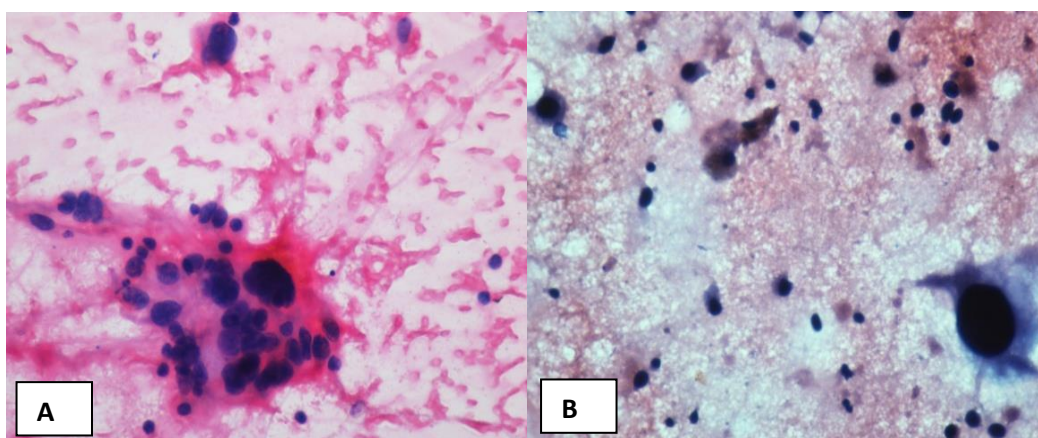


Figure 4: Photomicrograph of aspirates of lymph node with metastatic squamous cell carcinoma deposits (A) and melanoma deposits (B). (Pap x 400)

Discussion

FNAC is a simple and inexpensive diagnostic tool which is indicated in all superficial swellings including lymph nodes, thyroid, breast and soft tissue tumours.^[1] Ultrasonogram and computed tomography has made obtaining cells through long needles in deeper organs and tissues.^[2] FNA of lymph nodes is a first line of investigation in any case of lymphadenopathy because it is very sensitive and most of the time differentiation between malignant and benign lesions can be established.^[3] Subsequent investigations will be easy and the result of FNA can direct the clinician in a right pathway for management of the patient.

Out of the 294 cases, distinction between infectious, secondary metastatic deposit and primary lymphoproliferative disorders were clearly made. We had 104 cases (35.3%) of granulomatous lymphadenitis. This findings correlated well with studies conducted by Malakar et al and Gupta et al.^[11,12] All the aspirates were cellular and in many cases caseous material was aspirated. ZN stain was applied in all cases of caseous necrotic material aspirate. 34 cases showed positivity

for acid fast bacilli and a definitive diagnosis of tuberculous lymphadenitis was given [Figure 3A&3B]. Remaining cases were given an impression of granulomatous lymphadenitis. The diagnosis given in our centre was 96% accurate and similar findings were described by Al Mulhim et al.^[4]

40 cases of metastatic deposits in the lymph node were diagnosed with FNA. All the cases were confirmed with histopathology examination of the excised lymph node. Except for undifferentiated carcinomas, all the diagnosis were accurate with FNAC. With morphology and clinical examination there were no false positivity in the diagnosis of metastasis. The cases diagnosed were squamous cell carcinoma deposits [Figure 4A], adenocarcinoma deposits, melanoma deposits [Figure 4B] and papillary carcinoma deposits. Undifferentiated carcinomatous deposits was seen in six out of forty cases. Nodes were excised, sent for routine histopathological examination followed by IHC analysis. The diagnosis given from our centre was 100% accurate and it was comparable with many other studies.^[5,6]

Among the 18 cases of primary lymphoproliferative disorders, the diagnosis of Hodgkin lymphoma [Figure 2A & B] was given to 4 cases and it was confirmed with histopathology. Remaining cases were Non Hodgkin lymphoma and histopathology also showed malignancy but IHC was required to type them. Most of them were B cell neoplasms. The findings were similar to cases described by Das DK.^[7,9]

Remaining cases diagnosed as reactive lymphoid hyperplasia when there was a polymorphous population of lymphoid cells and tingible body macrophages^[8] [Figure 1] and suppurative lymphadenitis were treated medically and patient improved without surgery. These findings were comparable with the results of Patra et al.^[13]

Conclusion

FNA is a simple, easily repeatable and inexpensive method which can be done in many sites of the body at the same time is an useful tool in determining the nature of enlargement of lymph nodes. Even though subtyping of Non Hodgkin lymphoma is difficult through FNAC alone, still this diagnostic tool is very effective in determining the nature of disease in other situations.

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Conflict of interest: Nil.

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