

## Usefulness of Image Guided Fine Needle Aspiration Cytology in Adult Mesenteric Lymphadenopathy: A Study of 30 Cases

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### ABSTRACT

**Introduction:** Mesenteric lymphadenopathy is not easily detectable without the use of imaging modalities. Image guided fine needle aspiration cytology has proved to be safe, quick, reliable and cost effective method for obtaining tissue for cytopathological examination.

**Objective:** The main objective was to study cytomorphological features and to render cytodiagnosis to the aspirates so obtained by fine needle aspiration of mesenteric lymph nodes.

**Materials and Methods:** A total of 30 patients were subjected to image guided fine needle aspiration cytology as an outpatient procedure under local anaesthesia. After sonographic localization of pathology, a 22-gauge needle was introduced into the lesion under continuous real time image guidance and multiple smears were prepared. Air dried smears were then stained with May-Grunwald Giemsa stain. Ziehl-Neelsen staining and Papanicolaou staining were performed wherever indicated.

**Results:** 30 cases were studied, which showed male to female ratio of 2:1. The age of the patients ranged from 18 to 90 year. Malignant and benign lesions accounted for 60% and 40% respectively. Among the malignant lesions, Non-Hodgkin lymphoma was the most commonly found malignancy, followed by metastatic adenocarcinoma. In benign and inflammatory

category, tuberculosis of mesenteric lymph nodes was the most common lesion, accounting for 30% of all cases. The adequacy rate in our study was 100%.

**Conclusion:** Fine needle aspiration cytology of mesenteric lymph nodes through image guidance is a useful and safe diagnostic procedure.

**Keywords:** Fine Needle Aspiration Cytology, Mesentery, Lymph Nodes, Radiologic-Guidance.

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### INTRODUCTION

Lymph nodes, the most widely distributed and easily accessible lymphoid tissue, are frequently examined for diagnostic purposes. The degree and pattern of morphologic changes are dependent on the inciting stimulus and the intensity of response.<sup>1</sup> Local inflammatory causes of mesenteric lymphadenopathy include appendicitis, diverticulitis, cholecystitis, pancreatitis and it is often present in cases of mesenteric panniculitis. Other inflammatory conditions that have been reported to result in mesenteric lymphadenopathy include primary biliary cirrhosis, sarcoidosis, amyloidosis and mastocytosis.<sup>2,3</sup>

Almost any malignancy may produce mesenteric lymphadenopathy, most common being lymphoma. Primary malignancies that more commonly result in mesenteric lymphadenopathy include carcinoma of gastrointestinal tract, lung and pancreas.

Mesenteric lymphadenopathy is not easily detectable without the

use of imaging modalities. Image guided FNAC is widely accepted as an accurate and safe technique for obtaining tissue for cytological examination of lesions located in virtually any region of the body.<sup>4-7</sup> The utility of image guided FNAC in diagnosing the cause of mesenteric lymphadenopathy has been studied mostly in younger age group. Very few authors have studied mesenteric lymphadenopathy in adults. Hence the present cytological study of adult mesenteric lymphadenopathy through fine needle aspiration was undertaken.

### AIMS AND OBJECTIVES

1. To study the adequacy of materials obtained from the image guided FNAC of mesenteric lymph nodes.
2. To study cytomorphological features and to render cytodiagnosis to the aspirates so obtained by fine needle aspiration of mesenteric lymph nodes.

3. To identify the problems encountered in cytological interpretation of aspirates obtained from image guided FNAC of mesenteric lymph nodes.
4. To study the consequent side-effects and complications of the procedure.

**MATERIALS AND METHODS**

Aspirates/smears obtained from image guided fine needle aspiration of enlarged mesenteric lymph nodes were evaluated for cytological features. The criteria for selection of patients were as follows:

1. Aspirates from mesenteric lesions of lymph node origin, if suspicious clinically or reported radiologically were included in the study.
2. Patients were co-operative.
3. Patients had no bleeding tendency or coagulopathy.

All the patients were subjected to image guided fine needle aspiration as an outpatient procedure under local anaesthesia. After sonographic localization of the pathology, a 22-gauge needle was introduced into the lesion under continuous real time image

guidance. Aspiration was carried out while moving the needle forwards and backwards, this procedure being performed under sonographic visualization to ensure that the needle tip remained within the lesion. Two to three passes were made in each case and multiple smears prepared.

Air dried smears were then stained with May-Grunwald-Giemsa. Papanicolaou staining was performed on wet fixed smears, if needed. Ziehl-Neelsen staining for acid fast bacilli was done wherever indicated.

**RESULTS**

Fine needle aspiration under image guidance was done in 30 cases of mesenteric lymphadenopathy. The aspirates were considered adequate if the cellular elements were sufficient for rendering diagnosis. The adequacy was obtained in all 30 aspirates (100%). Male to female ratio in our study was 2:1 and the age ranged from 18 to 90 years (Table 1 and 2). Maximum number of cases was in 2nd to 7th decade. Aspirates from 30 cases were studied and based on the cytomorphology the various diagnoses of cases are given in table 3.

**Table 1: Distribution of cases according to sex**

Sex	No. of cases	Percentage
Male	20	66.7%
Female	10	33.3%
Total	30	100%

**Table 2: Distribution of cases according to age groups**

S. No.	Age groups (in years)	No. of cases	Percentage (%)
1.	18-20	5	16.7
2.	21-30	4	13.3
3.	31-40	4	13.3
4.	41-50	5	16.7
5.	51-60	5	16.7
6.	61-70	4	13.3
7.	71-80	2	06.7
8.	81-90	1	3.3
	Total	30	100

**Table 3: Distribution of cases according to cytological diagnoses**

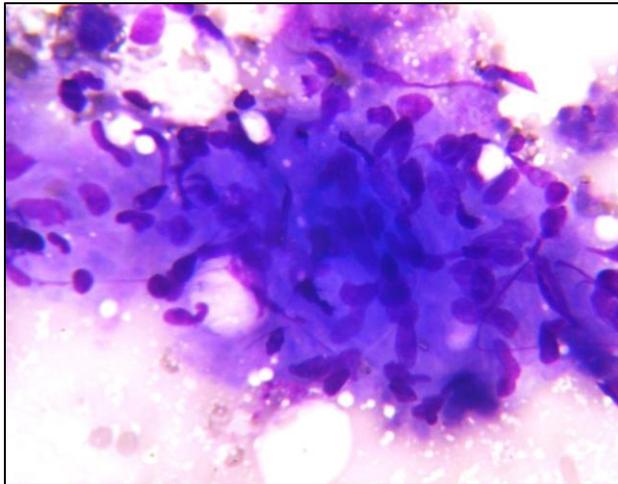
S. No.	Type of lesions	Number of cases	Percentage (%)
1.	Tubercular Lymphadenitis	9	30
2.	Reactive Follicular Hyperplasia	1	3.3
3.	Histoplasmosis	1	3.3
4.	Suppurative Lymphadenitis	1	3.3
5.	Non-Hodgkin Lymphoma	15	50
6.	Metastatic Adenocarcinoma	3	10
	Total	30	100

Out of 30 cases, 9 cases were of tubercular etiology, either conclusive or suggestive, depending on acid fast bacillus positivity. The gross examination of tuberculous aspirates revealed pus or caseous material or a drop of cellular material with or without blood. The maximum number of aspirates showed necrosis, followed by cellular material and pus. Microscopically,

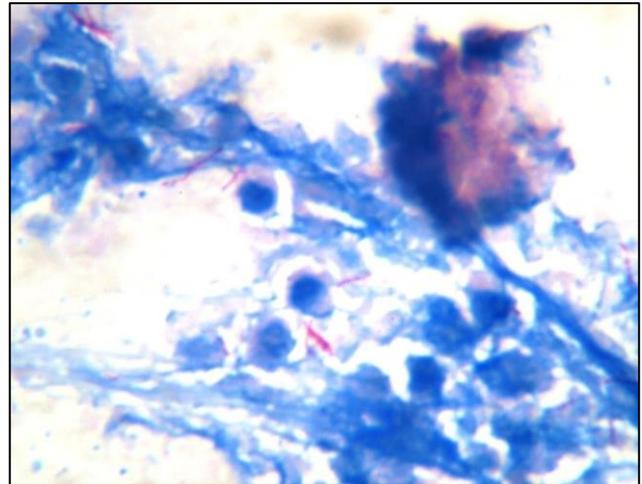
granulomas were found in a total of 6 cases out of 9. (Fig.1). Acid fast bacillus was sought in aspirates after Ziehl-Neelsen staining and it was positive in 6 cases out of 9. Numerous acid fast bacilli were detected in 2 cases (Fig.2). One of these cases also showed negative bacillary images in May-Grunwald-Giemsa stained smear (Fig.3).

15 cases were diagnosed as Non-Hodgkin lymphoma, of which 8 were large cell lymphoma, 3 were lymphoblastic lymphoma, 2 were mantle cell lymphoma and 2 cases were of lymphoplasmacytic lymphoma. Large cell lymphomas constituted the commonest entity among Non-Hodgkin lymphomas. These comprised predominantly of large cells, whose nuclei were more

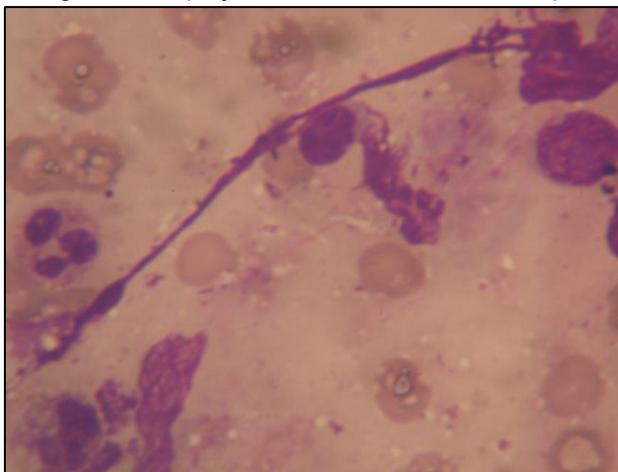
than twice the size of lymphocyte, had dispersed chromatin and prominent nucleoli. They had scanty to moderate basophilic cytoplasm. Mitoses were frequent (Fig. 4). These large cell lymphomas were easily diagnosed by virtue of the fact that large cells usually account for a minority of cells in lymph node aspirates.



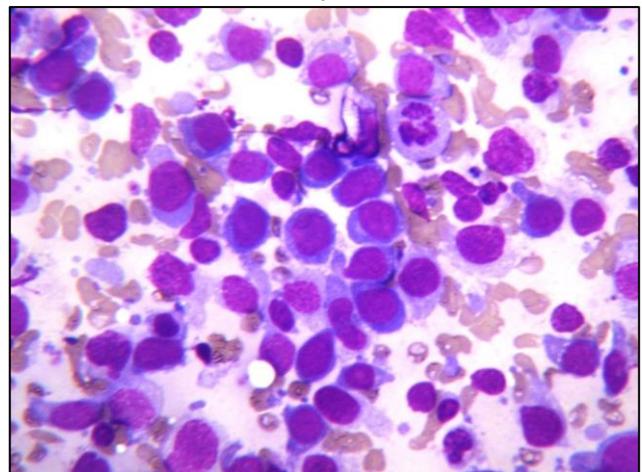
**Figure 1: Aspirate from tuberculous lymph node showing granuloma. (May Grunwald Giemsa stain, X 400)**



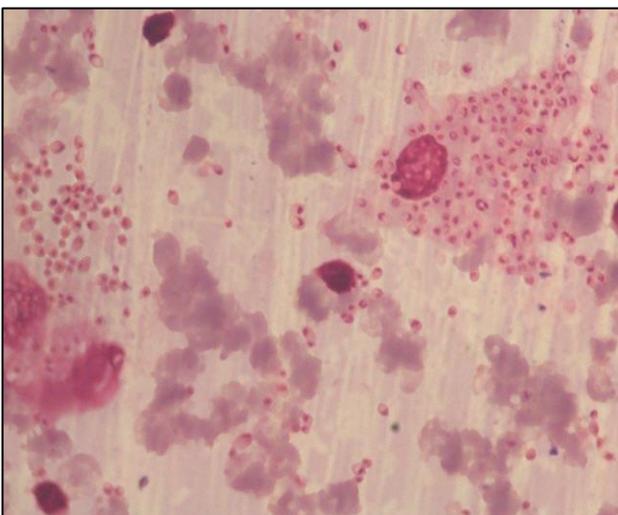
**Figure 2: Aspirate from tuberculous lymph node showing numerous acid fast bacilli. (Ziehl Neelsen stain, X1000)**



**Figure 3: Aspirate from tuberculous lymph node showing numerous negative bacillary images. (May Grunwald Giemsa stain, X 1000)**



**Figure 4: Aspirate from lymph node showing Large cell Non-Hodgkin Lymphoma (May Grunwald Giemsa stain, X 400)**



**Figure 5: Aspirate from lymph node showing Histoplasmosis (May Grunwald Giemsa stain, X 400)**

Out of 3 metastatic lesions encountered, all were adenocarcinoma. Only one case revealed intracellular mucin and extracellular mucin. One case of Histoplasmosis showed necrotic debris with numerous macrophages containing organisms intracellularly. These organisms were round to oval, about 2-5 microns in size, and showed variable budding (Fig.5). Absence of kinetoplast helped in distinguishing Histoplasma from Leishmania donovani and intracellular location was a helpful point of distinction from other small yeasts such as Candida. A case of reactive follicular hyperplasia showed polymorphous population of cells with a variable mixture of small lymphocytes (predominantly), plasmacytoid lymphocytes, centrocytes, centroblasts, immunoblasts and tingible-body macrophages.

**Side Effects and Complications Encountered**

All patients tolerated the procedure well, and none showed evidence of any major complications. Few patients complained of pain and discomfort after the procedure which was relieved by usual dose of analgesics.

## DISCUSSION

A total of 30 cases were aspirated and specific diagnosis was rendered in all the cases. The adequacy in our series was 100% which is close to that of Tikkakosi T et al, who reported an adequacy of about 97.2%.<sup>8</sup> The adequacy rate of other studies was significantly lower than the present study, the lowest being reported by Zoronoza J et al, which was 85%.<sup>9</sup> There is a wide variation in the male to female ratio in the literature which ranges from 0.2:1 to 2.4:1. In the present study M: F ratio was 2:1 which is comparable to that reported by Al-Mofleh IA.<sup>10</sup>

In our series of 30 cases, 60% of cases were malignant and 40% were non-malignant, which were very similar to that observed by Diulus L et al, who reported 63.3% cases as malignant and 36.7% cases as non-malignant.<sup>11</sup> In the study by Gupta S et al, 54% cases were malignant and 46% cases were non-malignant<sup>12</sup>, while Ahmad SS et al, reported 41.2% cases as malignant and 58.8% cases as non-malignant.<sup>13</sup>

The frequency of tuberculous lymph nodes in our study was 30%, which was very similar to that of Gupta S et al, who observed tuberculous lymph node in 32.2% of cases.<sup>12</sup> The highest frequency of 55% was reported by Dhir V et al.<sup>14</sup> While studies by Memel DS et al and Parajuli S et al did not encounter any case of tubercular lymphadenopathy.<sup>15,16</sup> Our study showed that maximum acid fast bacillus positivity was seen in cases which had necrotic background and findings in our study was fairly comparable with that of Suri R et al.<sup>17</sup> Reactive lymph nodes reported in our study was 3.3%. The range reported in literature for cases diagnosed as reactive lymph nodes, from mesenteric lymphadenopathy aspirates varies from 11.5% (Gupta S et al) to 28.5%.<sup>12,16</sup> Among malignant lesions, lymphomas and metastatic adenocarcinomas accounted for 83.3% and 16.7% of cases respectively, which were close to that of the study by Gupta S et al.<sup>12</sup>

### Problems Encountered in Cytological Interpretation

There was difficulty in sub-categorization of cases of large cell lymphoma into centroblastic, immunoblastic, T cell/histiocyte rich and anaplastic lymphoma. Cytological differentiation of mantle cell lymphoma from follicular lymphoma, predominantly centrocytic type was, difficult as there can be some cytological overlap between these two groups. However, low grade follicular lymphoma showed some admixture of centroblasts.<sup>18</sup> In cases with dilute smears, it was difficult to sub-classify lymphomas and differentiation of lymphomas from reactive follicular hyperplasia was also difficult. This problem was not alluded to by other workers.

One case of histoplasmosis showed necrotic debris with numerous macrophages containing organisms intracellularly. Our cytological findings were similar to that observed by Gupta N et al<sup>19</sup> and Thomas E.Giles.<sup>20</sup> These organisms need distinction from *Leishmania Donovanii* and *Candida*. Absence of kinetoplast and nucleus helped in distinguishing *Histoplasma* from *Leishmania Donovanii* and intracellular location was a helpful point of distinction from other small yeasts such as *Candida*.<sup>21</sup>

### Side Effects and Complications Encountered

Fine needle aspiration procedure was well tolerated by all of our patients, and no major complications occurred in our study. Few patients complained of pain and discomfort after the procedure but it was relieved with the usual dose of analgesics. Other workers like Zoronoza J et al, Memel D S et al and Gupta S et al also reported similar incidence of complications in fine needle

aspirations of intra-abdominal lymph nodes.<sup>8,12,15</sup> However, few workers, Droese M et al reported some severe and higher incidence of complications.<sup>22</sup> There are some contraindications to deep site aspirates. Anticoagulant therapy and intrinsic bleeding problems increase the risk of bruising and hemorrhage. Under such circumstances deep site aspirates are best avoided until the bleeding abnormality is corrected.

## CONCLUSION

Our experience indicates that fine needle aspiration cytology of mesenteric lymph nodes under imaging guidance is a useful and safe diagnostic procedure. Complications were minimal and included only mild discomfort or pain during needle puncture. Few problems encountered on cytology could be greatly minimized through clinico-radiologic correlation.

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