ORIGINAL ARTICLE

CYTOMORPHOLOGICAL PATTERN OF SUPERFICIAL LYMPHADENOPATHY

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ABSTRACT

Background: FNAC is considered as a reliable and inexpensive test for diagnosing lymphadenopathy cases with a high degree of accuracy. The objective of this study was to determine the cytomorphological pattern of superficial lymph node aspirates.

Material & Methods: This cross-sectional study was conducted in the Department of Pathology, Bannu Medical College, Bannu, Pakistan from October, 2012 to September, 2013. All patients with superficial lymphadenopathy were included in the study. Patients with a history of less than four weeks lymphadenopathy, having acute inflammatory process in the draining area or having lymphadenopathy due to known primary malignancy were excluded. The demographic variables were sex, age in years and age grouping. The research variables were site and cause of lymphadenopathy. Age grouping was; up to 15 years, 16-40 years and above 40 years.

Results: Out of 235 cases, there were 110(46.80%) males and 125(53.20%) females. The mean age of the sample was 35.00±13.50 (05-70) years. The frequency of age group up to 15 years was 82(34.90%), of 16-40 years was 50(21.27%) and of above 40 years was 103(43.83%). Site of lymphadenopathy were; left cervical lymph nodes in 105 (44.68%), right cervical lymph nodes in 60(25.53%), bilateral cervical lymph nodes in 11(4.68%), axillary lymph nodes in 30(12.76%), and other sites were involved in 29(12.35%) cases. The most cause of lymphadenopathy was chronic granulomatous lymphadenitis in 110 (46.8%).

Conclusion: Fine needle aspiration cytology is a good diagnostic tool in diagnosis of lymphadenopathy and will significantly enhance the institution of timely and appropriate treatment regimens.

Key Words: Fine needle aspiration; Cytology; Lymphadenitis; Reactive lymphoid hyperplasia; Lymphadenopathy; Tuberculous lymphadenopathy; Cytopathology; Lymphoproliferative Disorders.

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INTRODUCTION

Lymphadenopathy is a common finding in clinical practice. It can be caused by many factors.[1] Differential diagnosis of lymphadenopathy is extensive, with causes ranging from inflammatory to malignant.[2] It cannot be diagnosed easily on clinical grounds or by routine laboratory investigations alone. A series of investigations may be required to reach a definitive diagnosis, but in some cases even after clinical evaluation and investigations, definite diagnosis cannot be made. Fine needle aspiration cytology (FNAC) is considered as a reliable, safe, easy, inexpensive and rapid test for diagnosing lymphadenopathy cases with a high degree of accuracy.[3] Although it is capable of rendering cytological diagnosis but requires expertise in the field of cytopathology. Final diagnosis is based on tissue biopsy which is considered to be the gold standard for the diagnosis of lymphadenopathy cases as well as many other diseases including malignancies.[4]

Superficial lymphadenopathy is due to some underlying disease. Tuberculosis and other infectious diseases are considered to be the major causes of lymphadenopathy in tropical countries. In the developed countries it is the metastatic malignancies which account for most cases of enlarged lymph nodes. The reason being that infections are uncommon in these countries.[5] Reactive hyperplasia, due to some nearby inflammatory process is considered as a major cause of lymphadenopathy in children.[6]

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In Pakistan like other developing countries tuberculosis is a frequent cause of lymphadenopathy. Here its prevalence is 15%.[7] The objective of this study was to determine the cytomorphological pattern of superficial lymph node aspirates.

MATERIAL & METHODS

This cross-sectional study was conducted in the Department of Pathology, Bannu Medical College, Bannu, Pakistan from October, 2012 to September, 2013. A sample of 235 cases was recruited through non-probability consecutive sampling technique. All patients with superficial lymphadenopathy were included in the study. Patients with a history of less than four weeks lymphadenopathy, having acute inflammatory process in the draining area or having lymphadenopathy due to known primary malignancy were excluded. Informed consent was taken of all the patients or their parents/guardians in case of minors. Fine needle aspirations were taken under aseptic procedure. Two smears were made from aspirate of each patient, both to be fixed in ethanol. After fixation, the smears were stained with Haematoxylin and Eosin stains and examined by two histo-cytopathologists under light microscope for cytological diagnosis.

The demographic variables were; sex, age in years, and age grouping. The research variables were; site of lymphadenopathy, and cause of lymphadenopathy. Age grouping was; up to 15 years, 16-40 years and above 40 years. Age in years was analyzed by minimum, maximum, mean, and SD. All other variables were categorical and were analyzed by frequencies and percentages by using Microsoft Office Excel 2007 (Microsoft Corp©., Redmond, WA, USA).

RESULTS

Out of 235 cases of superficial lymphadenopathy for fine needle aspiration cytology, there were 110 (46.80%) males and 125 (53.20%) females with a male to female ratio of 1:1.4. The mean age of the sample was 35.00±13.50 (05-70) years. The frequency of age group up to 15 years was 82 (34.90%), of 16-40 years was 50 (21.27%) and of above 40 years was 103 (43.83%).

Site of lymphadenopathy were; left cervical lymph nodes in 105 (44.68%), right cervical lymph nodes in 60 (25.53%), bilateral cervical lymph nodes in 11 (4.68%), axillary lymph nodes in 30 (12.76%), and other sites were involved in 29 (12.35%) cases. The study revealed 110 (46.8%) cases of chronic granulomatous lymphadenitis as the most common cause of lymphadenopathy. (Table 1)

All five patients with metastatic nodes were above 50 years and were males by gender. Ages of 110 patients in the category of tuberculous lymphadenopathy ranged from 07 to 60 years with a male to female ratio of 1:1.2. All the patients having lymphadenopathy due to reactive hyperplasia were young, having age of 05 to 27 years. Out of 10 lymphoma patients, eight had Non-Hodgkin's and two had Hodgkin's lymphomas. A single patient of lymphadenopathy due to sarcoidosis was a male of 37 years while the one cause by infectious mononucleosis was a young female of 26 years.

Table 1: Causes of superficial lymphadenopathy on Fine needle aspiration cytology (FNAC) (n=235)

S. No.	Disease	Number	Percentage
1	Chronic granulomatous lymphadenitis	110	46.80
2	Reactive hyperplasia	108	45.96
3	Lymphoma	10	04.25
4	Metastatic Nodes	05	02.13
6	Infectious Mononucleosis	01	00.43
7	Sarcoidosis	01	00.43
Total		235	100

DISCUSSION

Lymphadenopathy is a clinical manifestation of many diseases. These may be simple inflammatory processes or fatal conditions like lymphomas and metastatic carcinomas.[8] FNAC, due to simplicity, minimal trauma and early availability of the results, has become an integral part of the initial diagnosis and management of lymphadenopathy cases.[9] Granulomatous lymphadenitis was the most frequent cause of lymphadenopathy in our study, followed by non-specific reactive hyperplasia (NSRH), being the second most common cause. This finding is supported by various national and international studies.[10,11] In our study NSRH involved almost all the superficial lymph node groups like cervical, axillary and inguinal. This is due to repeated infections and minor trauma in the drainage areas of these lymph node groups. This finding was supported by the study conducted by Ahmad in 1992.[10] In our study cervical region was the most frequently involved site by lymphadenopathy. Ahmad et al in 2005[12] and Nidhi et al in 2011[13] also observed cervical lymph nodes to be frequently enlarged. In our study, a female predominance was observed with a male to female ratio of 1:1.4. It correlates well to other studies by Olu et al in 2006[5], Nidhi et al in 2011[3] and Ageep in 2012.[8] Studies conducted by Patra et al in 1983[14] and Hirachand et al 2009[15] do not correlate with our observation. They show male predominance. These

results may be due to different number of cases in each of the study and random non probable selection of the patients without any preference to gender. Maharjan and his colleagues[16] show more than 54% tuberculous lymphadenopathy cases in their research. This study supports our findings of lymph node enlargement due to tuberculosis which were followed by reactive hyperplasia and lymphoma. These findings are supported by another international study conducted by Bermejo and colleagues. According to this study tuberculosis is endemic in developing countries where it accounts for about 95% of the global TB burden. With the emergence of HIV infection, TB has become more prevalent throughout the world.[17] Similarly study conducted by Fatima et al[18] regarding lymphadenopathy pattern in Aga Khan University Hospital, Karachi showed tuberculous lymphadenitis in 52.7% cases, reactive hyperplasia in 16%, metastatic lesions in 8.7% and lymphoproliferative disorders in 5.5% cases which are in close approximation to our findings. On the other hand in a study conducted in Saudi Arabia the reported findings are in sharp contrast to ours. This study shows lymphadenopathy due to primary or secondary malignancies in 42% cases, tuberculosis in 28% and reactive hyperplasia in 30% cases.[19] None of these studies have shown any case of sarcoidosis or infectious mononucleosis in comparison to our study. These diseases are a common cause of cervical lymphadenopathy in this part of the world and not common in our set up.[20] In another study of lymph node biopsies metastatic lesions were 36.50%, hyperplasia 31.37%, granulomatous inflammation 14.93% and lymphoma 16.85% which is opposite to our data and the data of other local and African studies.[1,5] McCabe and his colleagues in an old study found that toxoplasmic lymphadenitis reveals commonly cervical lymphadenopathy which mimics malignancy.[21] Sarcoidosis is a systemic disease and cervical nodes are involved as a part of the disease and not in isolation.[22] Same was the case in our study.

CONCLUSION

Fine needle aspiration cytology is a good diagnostic tool in diagnosis of lymphadenopathy and will significantly enhance the institution of timely and appropriate treatment regimens.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.