CLINICOPATHOLOGICAL CORRELATION OF FINE NEEDLE ASPIRATION CYTOLOGY WITH HISTOPATHOLOGY IN PERIPHERAL LYMPHADENOPATHY IN PATIENTS ATTENDING A TERTIARY CARE HOSPITAL IN EASTERN BIHAR

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ABSTRACT

BACKGROUND

Lymph nodes are among the organs most commonly biopsied for diagnostic purposes. Their frequent involvement in regional and systemic diseases and their accessibility make the morphologic study of lymph node an important aspect of pathology. In a poor country like ours where the burden of health cost is on the patient him/herself, biopsy as a first line of investigation is a financial problem.

The main objective of this study is to determine the reliability of fine needle aspiration cytology of peripheral lymph nodes and to arrive at a diagnosis by correlative study with histopathology.

MATERIALS AND METHODS

100 cases are selected randomly. All the diagnosis reached by fine needle aspiration was correlated with histopathology.

RESULTS

In this study, benign lesions were found in 83% cases and malignant lesions were found in 17% cases.

CONCLUSION

The overall sensitivity and specificity of FNAC was 89.4% and 98% respectively.

KEYWORDS

Peripheral Lymphadenopathy, FNAC, Histopathology.

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BACKGROUND

Aspiration of lymph node for diagnostic purpose was reported as early as 1904 by Greig and Grey.[1] It was in Europe, particularly Scandinavia, that FNA as a technique began to flourish in 1950s and 1960s.[2] Peripheral lymphadenopathy is a very common clinical presentation. The most common causes are minor infections leading to reactive hyperplasia of the lymph node.[3] The next common cause, especially in the developing nations with low socioeconomic conditions is the tuberculous lymphadenitis. Similarly primary malignant diseases like lymphomas, Hodgkin's and Non-Hodgkin's are also important to be diagnosed early for early treatment.[4] Another important aspect of lymphadenopathy is the metastatic diseases. In many cases, this may be the only manifestation of an underlying carcinoma.[5]

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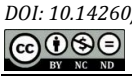

This prospective and correlative study was done in Katihar Medical College and Hospital, Katihar, Pathology Department from November 2014 to July 2016. In a study of 20 months, total number of FNAC cases were 2400 out of which peripheral lymphadenopathy was 710 (29.58%). The number of peripheral lymphadenopathy for histopathological correlation was 100 (14.1%). So this prospective study includes cases of FNAC with histopathological correlation.

MATERIALS AND METHODS

The cases were selected randomly as they came to Department of Pathology, KMCH for FNAC of peripheral lymph node as advised by the clinician. According to the proforma developed for this study, all datas were entered along with the hospital number of the patients. The procedure of FNAC was performed with 22-gauge needle and 10 mL disposable syringe under aseptic precautions, minimum of 2 slides for Pap stain, 4 slides for Leishman's stain and 1 slide for Ziehl-Neelsen stain were performed for each case. The histopathology biopsy of these cases were traced by full name, age, sex and hospital number. The informed consent was obtained from the patients before enrolling them for the study. The final analysis was done by Microsoft Excel.

Inclusion Criteria

a. Cases coming to the Pathology Department, KMC for FNAC of peripheral lymphadenopathy.
b. All age group and sex of the patient.
c. Different sites of peripheral lymph nodes.

Exclusion Criteria

a. Those cases whose biopsy was not submitted to the laboratory were excluded from the study.
b. Cases with only histopathology, but no FNAC were included in the study.
c. Cases that underwent image-guided FNAC were also excluded from the study.

RESULTS

Out of 2400 patients who underwent FNAC in Katihar Medical College and Hospital, Katihar, Bihar, during this study period 710 cases (29.58%) were of peripheral lymph nodes. The number of FNACs that had histopathological correlation was 100 (14.1%). The minimum age of patient was 5 years and maximum 74 years with a mean age of 30.94. The male:female ratio was 1:1. All the peripheral nodes of the body, for example cervical, supraclavicular, axillary, inguinal and epitrochlear nodes were taken in the study. Out of all the peripheral nodes, the most commonly involved was cervical lymph node with 67 cases. Maximum number of cases showed the size between 0.5 - 2.5 cm with 64 cases (64%).

The diagnosis on FNAC showed that most common cause of peripheral lymphadenopathy is reactive in 46% cases, granulomatous in 39% cases, lymphoma HL and NHL were diagnosed in 1% case and 6% cases respectively. The diagnosis of suspicious for malignancy was given in 5% cases; 3% cases were diagnosed as metastatic squamous cell carcinoma (Figure 1). The diagnosis given by FNAC was correlated with histopathology. In histopathology, the most common cause was reactive lymphadenitis 42% and tuberculosis with 35%. NHL was seen in 9%, HL in 4% and metastatic deposits 3% for squamous cell carcinoma, 2% sarcoidosis and 1% each for adenocarcinoma metastatic deposits, angioimmunoblastic lymphadenopathy, angiolymphoid hyperplasia with eosinophilia, Castleman's syndrome, histoplasmosis and Rosai-Dorfman syndrome (Figure 2).

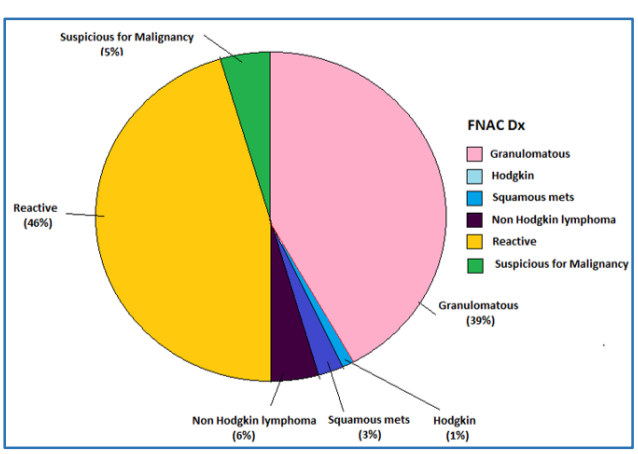

Figure 1. FNAC Diagnosis

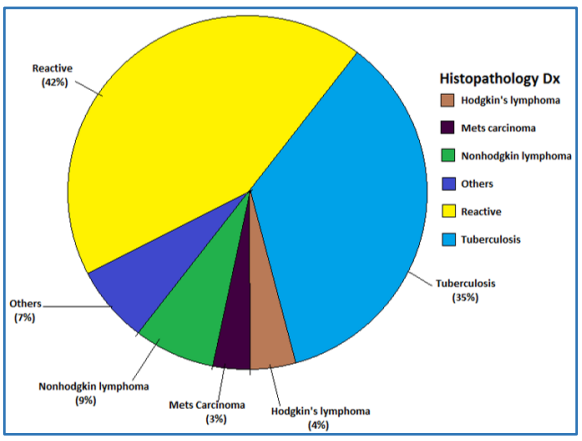

Figure 2. Histopathology Diagnosis

The overall sensitivity and specificity of FNAC in this study is 89.4% and 98% respectively.

DISCUSSION

At Katihar Medical College and Hospital, FNAC was performed by pathologist when the lesion was palpable. As written rightly by G. Kocjan in an editorial that having been trained in macroscopic as well as microscopic appearances of disease and site specific pathology and having insight into current methodologies, which require specimen handling in a way that was previously not possible, pathologists are in an ideal position to perform FNACs on palpable lesions.[6] As the technique is easy and without complications, it can be used in a variety of patients; in most cases benign and non-specific lesions are diagnosed. In a study done by Frable MA in which out of 1303 FNACs, most common were lymph nodes.[7] Similar, study done in Africa showed that maximum number (47.7%) of patients coming for pathological examination were of lymphadenopathy.[8] Results of the study done by M. Jain showed that lymphadenopathy predominated in the fine needle aspirations that was done.[9] This study showed similar results with maximum number of FNACs being done for lymphadenopathy.

Lymphadenopathy is a common problem seen in all age groups. The spectrum of the disease ranges from benign to malignant lesions.[10,11] The patients lie between the ages of 5 years to 74 years with mean age of 30.9 years. Male:female ratio is 1:1. All the peripheral lymph nodes including cervical, supraclavicular, axillary and inguinal were studied. Most commonly involved were cervical lymph nodes constituting 67% of all cases. In majority of cases, the nodal size was between 0.5 - 2 cm.

	Minimum	Maximum	Mean
Age in Years	5	74	30.94

Table 1. Age Range

Age Group	Frequency (No. of Cases)	Percent %
0 - 10	11	11
10 - 20	34	34
20 - 30	13	13
30 - 40	11	11
40 - 50	09	09
50 - 60	11	11
60 - 70	06	06
70 - 80	05	05
Total	**100**	**100**

Table 2. Age Group Percentage

Site	Age Group								Total	
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	N	%
Cervical	12	25	10	7	3	6	4	-	67	67
Axillary	-	4	2	2	2	2	1	-	13	13
S. Clav	-	-	2	2	1	1	-	4	10	10
Inguinal	-	2	-	1	2	2	-	-	07	07
Eptrclr	-	1	-	1	1	-	-	-	03	03
Total	**12**	**32**	**14**	**13**	**9**	**11**	**5**	**4**	**100**	**100**

Table 3. Site vs Age Group

Paediatrics Age Group

Paediatricians handle a large majority of cases presenting with acute lymphadenitis which persists for weeks and months, then the child is subjected for further investigations like FNAC and biopsy with the spectre of malignancy looming large even though benign causes still predominate.[12,13]

In 1991, Silverman and Colleagues examined 135 FNA specimens from multiple sites in children. FNAC showed sensitivity of 90.6% and specificity of 100% and positive predictive value of 100%. They concluded that FNAC allowed a definitive diagnosis and therapy for malignant/benign lesions in children.[2] According to a study done by U Handa et al in 'FNAC in evaluation of paediatric lymph node' 62.2% cases were reactive lymphadenitis, 25.2% were tuberculous lymphadenitis, 6.3% suppurative and few percent malignancy.[14] Another study done by M Jain showed that 60.6% were diagnosed as reactive lymphadenitis and 30.5% as tuberculous lymphadenitis.[9]

The paediatric age group included in this study was 27 cases (27%). The youngest child who underwent FNAC for lymphadenopathy was five years old. The most commonly affected lymph node in this age group was cervical lymph node. Other studies have also shown that the maximum number of lymphadenopathy is seen in cervical group.[15]

The most common cause of lymphadenopathy in children was seen to be reactive with 63% followed by tuberculosis in 25%. Other causes were angiolymphoid hyperplasia with eosinophilia and acute lymphoblastic leukaemia and Hodgkin's lymphoma.

This prospective study showed that lymphadenopathy predominated in the FNACs that was done during this period. Out of 2400 cases of FNAC, 710 cases (29.6%) were of peripheral lymphadenopathy. In this study, benign lesions were 83% and malignant lesions in 17% cases. The overall sensitivity and specificity of FNAC was 89.4% and 98% respectively.

CONCLUSION

Further improvement of diagnostic accuracy of FNAC depends on frequent practice and shared experience and on continued development of supplementary techniques that are affordable and can be implemented by any laboratory in developing countries like ours. However, the common advantage of FNAC over other biopsy methods is simplicity, speed and low cost. Perfection of the simple basic techniques remains a priority. The most efficient strategy may be to use the two techniques together, FNAC as the first line approach supplemented by core needle biopsy in selected cases, where the information given by FNAC is in doubt or insufficient to guide clinical management.[16] This strategy is likely to reduce the risk of misdiagnosis and the impact of cytological pitfalls.

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