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RESEARCH ARTICLE

CYTOMORPHOLOGICAL PROFILE OF LYMPHADENOPATHY FROM A TERTIARY CARE HOSPITAL IN KASHMIR AND CORRELATION WITH HISTOPATHOLOGY; A STUDY OF 740 CASES

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ABSTRACT

Background: Lymph nodes are among the commonly aspirated organs for diagnostic purposes. With the simple procedure of FNAC, most of the inflammatory, reactive and neoplastic conditions can be diagnosed without biopsy and biopsies are usually done in inconclusive cases or sometimes in the case of malignancies in the lymph node**.**

Materials and Methods: All patients diagnosed with superficial lymphadenopathy were included in the study. Fine Needle Aspiration Cytology (FNAC) was performed and diagnosis made on cytomorphological pattern. The diagnosis was compared with the histopathological diagnosis whereever available.

Results: This study included total of 740 cases with age range from 15 months to 85 years. About 78.3% were diagnosis as benign and 21.6% as malignant. Reactive lymphadenopathy was the most frequent diagnosis making up 61.4% of the cases. Tubercular lymphadenopathy was seen in 8.5% of cases with a female preponderance. Malignant lymphadenopathy was seen in 21.6% cases with metastatic tumors (68.7%) being more common than the primary lymphomas (30%). Histopathological correlation was done in 157 cases.

Conclusion: FNAC is a simple, safe, inexpensive and quick diagnostic procedure. Reactive lymph node is common cause of lymphadenopathy followed by malignant cause and Tuberculosis.

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INTRODUCTION

Fine Needle Aspiration Cytology (FNAC) is a simple, quick and inexpensive method that is used to sample superficial masses and is usually performed in the outpatient clinic. It causes minimal trauma to the patient and carries virtually no risk of complications. Despite rapid advances and the advent of newer methods of diagnostic imaging, an important determinant of patient management rests on tissue diagnosis (Dr. Ripunjaya Mohanty and Dr. Anne Wilkinson, 2013). Lymph nodes are among the commonly aspirated organs for diagnostic purposes. The incidence of lymphadenopathy appears to be increasing, especially among young adults all over the world. Their frequent involvement in regional and systemic diseases and their easy accessibility make the cytomorphological study of lymph nodes a permanent activity of pathologists. With the simple procedure of FNAC, most of the inflammatory, reactive and neoplastic conditions can be diagnosed without biopsy and biopsies are usually done in inconclusive cases or sometimes in the case of malignancies in the lymph node (Amit kumar Bapuso Pandav *et al*., 2012; Nada A. Al-Alwan *et al*., 1996; Ruchi Khajuria *et al*., 2006; Hirachand *et al*., 2009; Adhikari *et al*., 2011; Ahmad *et al*., 2008; Ajay Kumar Kochhar *et al*., 2012).

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MATERIALS AND METHODS

This study was conducted in the Postgraduate Department of Pathology Government Medical College Srinagar, Kashmir over a period of two years, from January 2012 to December 2013. All patients diagnosed clinically as lymphadenopathy were included in the study. An informed written consent was taken from all patients. A brief clinical history and a meticulous physical examination were done in all cases and the findings were noted. FNAC was performed using a 20 ml disposable syringe attached to a 22 gauge needle. Slides were made, fixed in 100% alcohol and stained with H&E and Papanicolaou stains. Some slides were air dried and stained with Giemsa stain. Acellular and hypocellular aspirates were excluded from the study. Cytological findings were noted in all cases. In some cases where biopsy was done, their histopathology was correlated with the cytological diagnosis.

RESULTS

The total number of patients included in the study was 740. The age of the patients ranged from 15 months to 85 years. The cytological diagnosis Benign diagnosis was made in 580(78.3%) cases and malignant diagnosis was made in 160(21.6%) of cases. Reactive lymphadenopathy was the most frequent diagnosis making up 61.4% (455/740) of the cases. Maximum cases were seen in the second and third decades of life, with males 262/455 (57.5%) being affected more than the females 193/455 (42.4%). Tubercular lymphadenopathy was seen in 64/740(8.5%) of cases and most of the cases were seen in third decade of life with a female preponderance. Malignant lymphadenopathy was seen in 21.6% (160/740) cases with metastatic tumors 110/160(68.7%) being more common than the primary lymphomas 48/160 (30%) (Table 1). Cervical lymph nodes were the commonly affected nodes in both benign as well as malignant cases. Table 2 gives site distribution of lymphadenopathy. Histopathological correlation was done in 157 cases in which 60 cases of reactive lymph nodes were diagnosed as reactive on histopathology also. In patients of chronic granulomatous lymphadenopathy, histopathology was done in 25 patients and 24 cases were diagnosed as tuberculosis and one case was diagnosed as non-tubercular, probably sarcoidosis. Out of 39 cases of non Hodgkins lymphoma (NHL), 31 (79.4%) were diagnosed as same on histopathology and 5 cases were diagnosed as reactive hyperplasia and 3 as poorly differentiated carcinomas. Immunohistochemistry was done in 7 cases of NHL and 6 were positive for B-cell markers and one case was positive for T-cell markers. Out of 9 cases of Hodgkins lymphoma (HL), histopathology was done in 8 cases and 7 (87.5%) were diagnosed as HL and one case was diagnosed as Langerhan cell histiocytosis (LCH). In metastatic lymphadenopathy, histopathology was done in 25 cases and all of them were confirmed on histopathology too.

Table 1. Cytological diagnosis with age and sex distribution

Cytological diagnosis	Sex	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	total	Grand total	%
Nonspecific/Reactive	Male	57	93	61	25	12	08	06	0	0	262	455	61.4
lymphadenopathy	Female	23	60	64	30	05	05	06	0	0	193		
Chronic granulomatous	Male	01	10	04	02	0	0	0	0	0	17	57	7.7
lymphadenopathy	Female	01	14	14	06	03	02	0	0	0	40		
Tuberculous	Male	03	06	08	06	0	03	0	0	0	26	64	8.6
lymphadenopathy	Female	0	11	18	08	0	01	0	0	0	38		
Acute suppurative	Male	0	0	01	0	01	0	0	0	0	02	04	0.7
lymphadenopathy	Female	01	0	0	0	0	01	0	0	0	02		
Primary malignant												48	6.4
lymphadenopathy Non	Male	0	01	05	03	04	05	06	01	01	26	39	5.2
Hodgkins lymphoma	Female	01	02	02	01	03	01	03	0	0	12		
Hodgkins lymphoma	Male	01	01	01	0	01	0	0	01	0	05	09	1.2
	Female	01	01	01	0	0	01	0	0	0	04		
Metastatic	Male	0	01	04	08	07	18	21	04	03	66	110	14.8
lymphadenopathy	Female	0	02	03	07	11	09	07	03	02	44		
Leukemic Infiltration	Male	-	-	-	-	-	-	-	-	-	-	02	0.27
	Female	01	-	-	-	-	-	01	-	-	-		
Total												740	

Table 2. Sites of lymph nodes aspirated

Site	Total
Cervical lymph nodes	445
Submandibular lymph nodes	68
Submental lymph nodes	24
Supraclavicular lymph nodes	58
Preauricular lymph nodes	12
Postauricular lymph nodes	09
Axillary lymph nodes	81
Inguinal lymph nodes	43
Total	740

Table 3. Cytology correlation with histopathology (Total= 157)

Cytological Diagnosis	Total	Histopathology (HP) correlated	HP not correlated	% of accuracy of correlation
Reactive Lymphadenopathy	60	60	-	100
Chronic granulomatous lymphadenopathy suggestive of Tuberculosis	25	24	01- Sarcoidosis	96
Non Hodgkins lymphoma	39	31	05- Reactive 03- Poorly differentiated carcinoma	79
Hodgkins lymphoma	08	07	01-Langerhan cell histiocytosis	87
Metastatic lymphadenopathy	25	25	-	100
Total	157	147	10	

DISCUSSION

The lymphatic system is one of the most important systems in the body through which diseases may not only be cleared away, but also spread from one part of the body to another. Lymphadenopathy is a commonly encountered clinical condition which needs a quick and accurate diagnosis, so that an early and proper treatment plan can be initiated. Fine Needle Aspiration Cytology (FNAC) is a simple, quick and inexpensive method for quick diagnosis of lymphadenopathy, reducing the need for biopsy. In the present study we performed FNAC on 740 patients of lymphadenopathy over a period of 2 years. The pattern of lesions varied from non-neoplastic lesions like reactive/nonspecific lymphadenopathy, tuberculous lymphadenopathy, acute suppurative lymphadenopathy, granulomatous lymphadenopathy to neoplastic lesions like metastatic lymphadenopathy and lymphomas. In our study, age of the patients ranged from 15 months to 85 years. This finding was correlated with other studies who stated that lymph node lesions can be found in patients ranging from an early to advanced age (Amit kumar Bapuso Pandav *et al*., 2012; Nasreen H Hafez and Neveen S Tahoun, 2011; Tilak *et al*., 2002). In the present study, 580/740 (78%) cases were diagnosed as having benign lymphadenopathy and 160/740 (22%) cases as malignant lymphadenopathy. Our findings were comparable with other studies (Dr. Ripunjaya Mohanty and Dr. Anne Wilkinson, 2013; Amit kumar Bapuso Pandav *et al*., 2012; Ruchi Khajuria *et al*., 2006; Hirachand *et al*., 2009). In our study, reactive/nonspecific lymphadenopathy was observed to be the most frequent diagnosis with 455/740 cases (61.4%) and most of the patients were in the second and third decade of life with a male preponderance. Our findings were in correlation with other studies (Dr. Ripunjaya Mohanty and Dr. Anne Wilkinson, 2013; Ruchi Khajuria *et al*., 2006; Hirachand *et al*., 2009; Adhikari *et al*., 2011; Ajay Kumar Kochhar *et al*., 2012). All of the 60 biopsies of reactive lymphadenopathy received correlated with cytological diagnosis (100% correlation). This finding was correlated with the study conducted by Ripunjaya *et al*. The second most common benign diagnosis in our study was tuberculous lymphadenopathy (8.5%). Our findings correlated well with other studies and its incidence ranged from 7.8% to 52% (Dr. Ripunjaya Mohanty and Dr. Anne Wilkinson, 2013; Nada *et al*., 1996; Ruchi Khajuria *et al*., 2006; Nasreen H Hafez and Neveen S Tahoun, 2011). Biopsies were not done in patients with tubercular lymphadenopathy in these studies. Chronic granulomatous inflammation was observed in 7.6% of cases in our study. Out of 25 biopsies reported as chronic granulomatous inflammation suggestive of tuberculosis on cytology revealed tuberculosis in 24 biopsies, which shows 96% correlation. Our findings were almost same as in other studies (Dr. Ripunjaya Mohanty and Dr. Anne Wilkinson, 2013; Amit kumar Bapuso Pandav *et al*., 2012; Ruchi Khajuria *et al*., 2006; Ajay Kumar Kochhar *et al*., 2012).

Among 740 cases, 160 (21.6%) cases were diagnosed as neoplastic by FNAC in our study, of which more cases were of metastasic involvement 110/158 (68.7%) rather than primary lymphomas 48/158 (30%). Our findings were similar to other studies in which the neoplastic involvement varied from 3.8% to 82% (Amit kumar Bapuso Pandav *et al*., 2012; Ruchi Khajuria *et al*., 2006; Ahmad *et al*., 2008; Ajay Kumar Kochhar *et al*., 2012; Alam *et al*., 2010). All cases of metastatic lymphadenopathy were confirmed by histopathology with a diagnostic accuracy of 100%. A diagnostic accuracy of 79.4% and 87.5% was seen in case of non Hodgkins and Hodgkins lymphoma respectively. Our findings correlated well with other studies in which it ranged from 76.9% to 100% (Dr. Ripunjaya Mohanty and Dr. Anne Wilkinson, 2013; Nada A. Al-Alwan *et al*., 1996; Nasreen H Hafez and Neveen S Tahoun, 2011). The overall diagnostic accuracy was reported as 93.6% which was similar with other studies (Adhikari *et al*., 2011; Singh *et al*., 2003; Abhishek Maheshwari *et al*., 2015; Babu *et al*., 2014). Our study revealed that cervical lymph nodes were the most commonly involved nodes in both benign as well as malignant lesions and among the metastatic malignancies squamous cell carcinoma was the most common. Our findings were similar to other studies (Alam *et al*., 2010; Bhagwan *et al*., 2007; Hoftr *et al*., 2002; Mitra *et al*., 2011). Most of the metastatic squamous cell carcinomas were from the head and neck region. A complete history, radiological findings and immunohistochemistry in selected cases may help in locating the primary site.

Conclusion

FNAC is a simple, safe, inexpensive and quick diagnostic procedure for diagnosing both benign as well as malignant lesions and will reduce the need for more invasive procedures like tissue biopsy in case of most of the benign lesions. Reactive lymphadenopathy was reported to be most common cause of lymphadenopathy. Among the malignant causes, metastasis was commoner than primary lymphoma.

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