Original Article

Lymph Node Biopsies: Evaluation of Disease Pattern and Role of Surgery – Our Experience from South Punjab, Pakistan

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Abstract

Objective: The objective of the study was to determine the frequency of different pathologies presenting with lymphadenopathy in patients from South Punjab and to evaluate the role of surgery in reaching the diagnosis. **Materials and Methods:** It was a cross-sectional study done at Recep Tayyip Erdogan Hospital, Muzaffargarh (managed by The Indus Health Network), from August 2014 to October 2017. Those being biopsied at some other hospital and the lymph node dissection biopsy done for a known primary cancer were excluded. **Results:** Lymph node biopsy was done on a total of 71 patients (56.3% *n* = 40 males, 43.7% *n* = 31 females). The mean (standard deviation) age of the patients was 27.30 ± 17.07 years. Open biopsy was performed on 70 cases (98.6%), whereas laparoscopic biopsy was performed on one case (1.4%). The most common pathology found on histopathology report was Tuberclosis (TB) lymphadenitis (49.3%, *n* = 35), followed by lymphoma (25.4% – Hodgkin's disease [HD] 15.5% and non-Hodgkin's lymphoma [NHL] 9.9%). **Conclusion:** TB is the most common pathology, followed by lymphoma. HD is more common than NHL. Surgical biopsy is the gold standard. Laparoscopy and other minimally invasive techniques are very safe and useful for excision biopsy of the central lymph nodes.

Keywords: Biopsy, lymph nodes, lymphadenopathy, surgery

Introduction

Lymph nodes enlargement is a very common presentation of many benign and malignant diseases. The most common benign condition encountered is infective, while the most common malignant disorder found is lymphoma.[1] The incidence of these benign and malignant conditions shows a wide variation geographically. In a study from the UK, lymphoma was reported 21% from the the biopsied specimens of lymph nodes, while a report from Western Saudi Arabia showed lymphoma in 44.3% of cases.[2-3] A study from Turkey reported the frequency of malignant disease in peripheral lymph nodes as 66.5%, while another study on lymph nodes biopsy of children from Turkey showed 19.6% malignant conditions and 80.4% benign conditions.[1,4] A study from South Africa showed malignancy as the largest pathology group (39%) while 22% as necrotizing granulomatous disease.[5] However, a study involving the adults from Nigeria reported tuberculous lymphadenitis (26.7%) and metastasis (26.5%) having the same frequency.[6] A study from Kuala Lumpur showed reactive hyperplasia, the most common (33.1%) pathology.[7] Similarly, a study from Iran showed reactive hyperplasia, the most common pathology, but the frequency is almost the double of that as shown in Kuala Lumpur study.[8] A large study from South India showed neoplastic lesions, the most common cause in 53%, whereas tuberculous lymphadenitis in 18%.[9]

In the national literature, a study from the Rural Sindh showed tuberculosis, the main cause of enlarged lymph nodes in 53.4% cases.[10] However, lymph node excision biopsy study in children from Nishtar Medical College showed 77.8% of cases of tuberculous lymphadenitis.[11] This regional variation in the frequency of diseases in lymphadenopathy depicts environmental, genetic, or socioeconomic factors involved in the causation of these disorders. Extensive research of the national literature shows no study on this issue from the South Punjab region.

General surgeons have been playing their role in performing staging laparotomy for Hodgkin's lymphoma.[12] However,

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with the advent of computed tomography, there is little role for staging laparotomy and the surgeon's role has become now more diagnostic than therapeutic.[2] Sensitivity and specificity of fine-needle aspiration cytology (FNAC) in diagnosing the benign diseases causing the lymphadenopathy are very high, but it is not as sensitive and specific in diagnosing the malignant diseases.[11] Histopathology of surgical biopsy specimens is the gold standard tool for the accurate diagnosis of the pathology.[13]

We aim to determine the frequency of different pathologies presenting with lymphadenopathy in patients from South Punjab and to evaluate the role of surgery in reaching the diagnosis.

Materials and Methods

This cross-sectional, retrospective medical record review study was performed at the Department of General Surgery, Recep Tayyip Erdogan Hospital, Muzaffargarh (managed by The Indus Health Network), a free of cost, tertiary care facility. After approval from the Institutional Review Board, approval number IRD_IRB_2017_11_001, the computerized medical records of all the patients (male, female, any age) presenting with clinically enlarged lymph nodes persisting for >6 weeks, undergone lymph node biopsy from August 2014 to October 2017, were reviewed. Only the patients from South Punjab (residents of Multan, Bahawalpur and DG Khan Divisions) were included in the study. Those being biopsied at some other hospital and the lymph node dissection biopsy done for a known primary cancer were excluded from the study.

A questionnaire was filled for all patients. The information included the age, gender, and district of residence of the patient, lymph node group biopsied, type of anesthesia (local/regional/general), type of surgery (open/laparoscopic), type of biopsy (excisional/incisional), postoperative complications, and histopathology report (pathologic size of lymph node in centimeter and histopathologic diagnosis). Data were entered into the computer and analyzed using software IBM® SPSS® Statistics 20.0 (Colombia University NY;USA). The mean (standard deviation [SD]) was computed for all the quantitative variables, and the frequency and percentage were computed for all the qualitative variables.

Results

Lymph node biopsy was done on a total of 71 patients. There were 56.3% (n = 40) males and 43.7% (n = 31) females. The mean (SD) age of the patients was 27.30 ± 17.07 years (maximum 73 years, minimum 6 years, and range 67 years).

The most common lymph node group biopsied was cervical (60.6%, n = 43), followed by axillary, inguinal, and abdominal [Figure 1]. Most of the biopsies were performed under general anesthesia (59.2%, n = 42), followed by under local anesthesia (39.4%, n = 28). Excisional biopsy was performed on 68 cases (95.8%), whereas incisional biopsy was performed on 3 cases (4.2%). Open biopsy was performed on 70 cases (98.6%), whereas laparoscopic biopsy was performed on one case (1.4%). No postoperative complications were found.

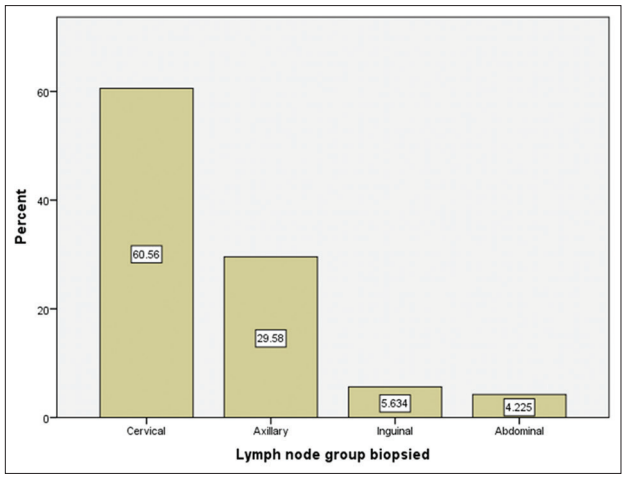

Figure 1: Distribution of lymph node group biopsied

The most common pathology found on histopathology report was tuberculous lymphadenitis 49.3% (n = 35), followed by lymphoma 25.4%, n = 18 (Hodgkin's disease [HD] 15.5%, and non-Hodgkin lymphoma [NHL] 9.9%), reactive hyperplasia, and metastatic carcinoma [Figure 2].

In the tuberculous lymphadenitis group, it was common in females, 24 (68.5%), as compared to males, 11 (31.5%). While the lymphoma was more common in males, 13 (76.4%) as compared to females n = 4 (23.6%).

In reactive hyperplasia group, 85.7% (n = 12) were male and 14.3% (n = 2) were female. All three patients with metastatic cancer were male.

Tuberculous lymphadenitis was most common in 15–30 years of age group 60% (n = 21). Hodgkin's lymphoma was the most common (81%, n = 6) in younger age ≤45 years, whereas the distribution of NHL was equal among both ≤45 years and ≥45 years group. Metastatic carcinoma was found commonly (66%, n = 2) in the older age group ≥45 years.

In the cervical group, the most common diagnosis was tuberculous lymphadenitis (69.7%, n = 30), lymphoma 16.2% (n = 7), reactive hyperplasia 6.9% (n = 3), metastatic cancer 4.6% (n = 2). In the axillary group, about 50% (n = 10) of the cases were reactive hyperplasia; lymphoma was 28% (n = 6) and tuberculous lymphadenitis was 19% (n = 4) cases. Lymphoma was the most common pathology in inguinal group (75%, n = 3) while tuberculous lymphadenitis in rest of 25%, (n = 1) cases. In abdominal group, lymphoma was 66% (n = 2) and reactive hyperplasia was 33% (n = 1).

In lymphoma cases, the pathological size of the lymph nodes was ≥2 cm in 88% (n = 15) cases, while in tuberculosis cases, the lymph node size was ≥2 cm in 75% (n = 26) cases.

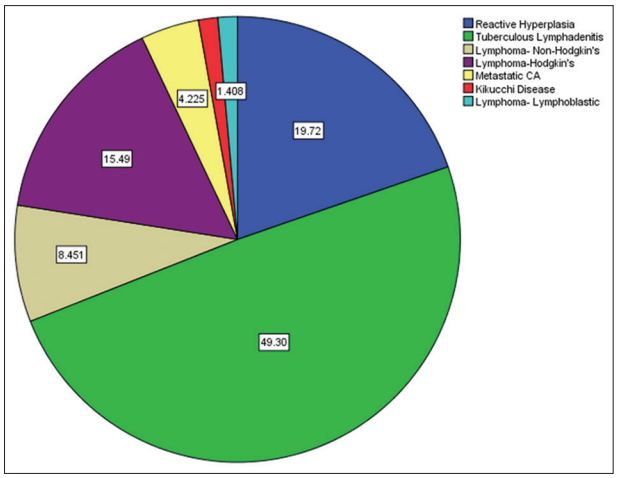

Figure 2: Distribution of histopathological diagnosis

In metastatic cancer cases, lymph node size was ≤2 cm in 66% (n = 2) cases, and in reactive hyperplasia cases, lymph node size was ≤2 cm in 42% (n = 6) cases.

Discussion

In our study, the male-to-female ratio was slightly higher than that reported in national and regional studies.[1,2] The mean age of our patients was younger as compared to other studies mentioned in literature.[2]

Regarding the lymph node group biopsied, we found the cervical group sampled most commonly (60.6%) followed by axillary, inguinal, and abdominal group, respectively. This finding is consistent with the findings of local, regional, and western studies.[1-4] This may be due to a large amount of lymphatic tissue in the head-and-neck region and more accessible lymph nodes in this region.

We found tuberculous lymphadenitis the most frequent (49.3%) pathology diagnosed, followed by lymphoma, reactive hyperplasia, and metastatic carcinoma. Many studies from the national literature confirm this finding.[1,5-7] Some studies from the developing countries of the region also confirm this.[3,8,9] In contrast, a very large study from South India surprisingly shows lymphoma, the most common.[10] Tuberculosis is not the most common pathology found in studies from the West, Turkey, and Iran.[4,11,12] This difference among the developing and developed nations suggests the low-socioeconomic status a contributing factor for the incidence of tuberculous lymphadenitis. In our study, tuberculosis most commonly involves the cervical lymph nodes of females of younger age (15–30 years). A study on Nigerian adults shows a similar finding.[3]

In this report, lymphoma was the most common malignant pathology. HD was more common than NHL (15.5% vs. 9.9%). Hodgkin's lymphoma was the most common (81%) in younger age ≤45 years, while the distribution of NHL was equal among both ≤45 years and ≥45 years groups. HD was more common than NHL in studies from Iran and Saudi Arabia, and a large study from Pakistan also showed the similar finding,[2,5,11] but the studies from Turkey, the UK, and India showed NHL more common than HD.[4,10,12] This regional variation of the frequency of NHL and HD shows environmental or genetic causation of these diseases.

Our study showed that 72% of the specimens had size ≥2 cm, whereas 28% of the specimens had a size ≤2 cm. Majority of lymphoma cases (88%) and tuberculous cases (75%) had a size ≥2 cm. Larger the size of the lymph node, larger the chance of it being pathologic. This finding coincides with the findings of a study from Iran.[11]

In our study, a biopsy was performed under general anesthesia in 59.2% cases, while local anesthesia was used in 39.4% cases. Lymph node biopsy is usually performed as an outpatient procedure under local anesthesia.[7,12,13] This difference may be due to the surgeon's choice of anesthesia. Excisional biopsy was performed in 95.8%, whereas incisional biopsy was performed in very few cases. No postoperative complications occurred.

Open biopsy was performed in almost all cases, while laparoscopic biopsy was performed in one case. Although open biopsy of the most accessible lymph node is performed most of the time, FNAC under image guidance has been used to sample centrally located (mediastinal and abdominal) lymph nodes.[4] Although, in our study, the laparoscopic biopsy was performed in a very limited number, it may prove an excellent tool to perform an excisional biopsy of the intraabdominal lymph nodes.[14,15] Surgery may play a role to biopsy the lymph nodes by mediastinoscopy and thoracoscopy.[16]

FNAC has appeared a promising technique for the evaluation of etiology of lymphadenopathy because of low cost, easily 28 performed without anesthesia. However, histopathological evaluation of lymph node biopsy specimen is considered the "gold standard."[17-22] Although FNAC can diagnose most of the 31 benign diseases and many lymphoma cases, it cannot provide sufficient material for further evaluation of lymphoma, on which the therapeutic decisions are based.[4,7]

Conclusion

Tuberculous lymphadenitis is the most common pathology followed by lymphoma in lymphadenopathy in South Punjab. Hodgkin's lymphoma is more common than its non-Hodgkin's counterpart. Surgical biopsy of the most accessible lymph node is a very safe and effective diagnostic method. Laparoscopic surgery and other minimally invasive methods are very useful and preferred over image-guided FNAC for sampling the centrally located lymph nodes.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Sarsu SB, Sahin K. A retrospective evaluation of lymphadenopathy in

children in a single center's experience. J Pak Med Assoc 2016;66:654-7.
2. Morris-Stiff G, Cheang P, Key S, Verghese A, Havard TJ. Does the surgeon still have a role to play in the diagnosis and management of lymphomas? World J Surg Oncol 2008;6:13.
3. Albasri AM, El-Siddig AA, Hussainy AS, Alhujaily AS. Pattern of lymph node pathology in Western Saudi Arabia. Asian Pac J Cancer Prev 2014;15:4677-81.
4. Özkan EA, Göret CC, Özdemir ZT, Yanık S, Göret NE, Doğan M, *et al.* Evaluation of peripheral lymphadenopathy with excisional biopsy: Six-year experience. Int J Clin Exp Pathol 2015;8:15234-9.
5. Reddy DL, Venter WD, Pather S. Patterns of lymph node pathology; fine needle aspiration biopsy as an evaluation tool for lymphadenopathy: A retrospective descriptive study conducted at the largest hospital in Africa. PLoS One 2015;10:e0130148.
6. Olu-Eddo AN, Ohanaka CE. Peripheral lymphadenopathy in Nigerian adults. J Pak Med Assoc 2006;56:405-8.
7. Kim LH, Peh SC, Chan KS, Chai SP. Pattern of lymph node pathology in a private pathology laboratory. Malays J Pathol 1999;21:87-93.
8. Zahir S, Azimi A. Histopathologic findings of lymph node biopsy cases in comparison with clinical features. Pak J Med Sci 2009;25:728-33.
9. Roy A, Kar R, Basu D, Badhe BA. Spectrum of histopathologic diagnosis of lymph node biopsies: A descriptive study from a tertiary care center in South India over 5½ years. Indian J Pathol Microbiol 2013;56:103-8.
10. Memon J, Talpur A, Solangi R, Qazi A, Akhund A. An audit of peripheral lymphadenopathy. Pak J Surg 2007;23:183-6.
11. Hussain M, Chishti A, Mukhtar R, Khan H, Siddiqui H, Pasha H. Peripheral lymphadenopathy in children, comparison of fine needle aspiration cytology with open biopsy. Ann King Edward Med Univ 2005;11:398-9.
12. Glatstein E, Guernsey JM, Rosenberg SA, Kaplan HS. The value of laparotomy and splenectomy in the staging of Hodgkin's disease. Cancer 1969;24:709-18.
13. Bazemore AW, Smucker DR. Lymphadenopathy and malignancy. Am Fam Physician 2002;66:2103-10.
14. Naseem S, Bilal S, Akhlaq M, Henna N, Sami W, Nagi A, *et al*. A pattern of lymphadenopathies seen in a tertiary care hospital in Lahore, Pakistan. Turk J Med Sci 2011;41:353-8.
15. Malik G, Rehan T, Bhatti S, Riaz J, Hameed S. Relative frequency of different diseases in patients with lymphadenopathy. Pak J Surg 2003;19:86-9.
16. Tiwari M, Aryal G, Shrestha R, Rauniyar SK, Shrestha HG. Histopathologic diagnosis of lymph node biopsies. Nepal Med Coll J 2007;9:259-61.
17. Getachew A, Demissie M, Gemechu T. Pattern of histopathologic diagnosis of lymph node biopsies in a teaching hospital in Addis Ababa, 1981-1990 G.C. Ethiop Med J 1999;37:121-7.
18. Newton MV, Ramesh RS, Manjunath S, ShivaKumar K, Nanjappa HG, Damuluri R, *et al.* Histological surprises in benign cytologies after lymph node biopsy-surgeon's knife improving patient care. Indian J Surg Oncol 2017;8:113-8.
19. Silecchia G, Raparelli L, Perrotta N, Fantini A, Fabiano P, Monarca B, *et al.* Accuracy of laparoscopy in the diagnosis and staging of lymphoproliferative diseases. World J Surg 2003;27:653-8.
20. Casaccia M, Torelli P, Cavaliere D, Panaro F, Nardi I, Rossi E, *et al.* Laparoscopic lymph node biopsy in intra-abdominal lymphoma: High diagnostic accuracy achieved with a minimally invasive procedure. Surg Laparosc Endosc Percutan Tech 2007;17:175-8.
21. Massone PP, Lequaglie C, Magnani B, Ferro F, Cataldo I. The real impact and usefulness of video-assisted thoracoscopic surgery in the diagnosis and therapy of clinical lymphadenopathies of the mediastinum. Ann Surg Oncol 2003;10:1197-202.
22. Mohan A, Reddy MK, Phaneendra BV, Chandra A. Aetiology of peripheral lymphadenopathy in adults: Analysis of 1724 cases seen at a tertiary care teaching hospital in Southern India. Natl Med J India 2007;20:78-80.