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Original Research Article

An audit to study the diagnostic yield of lymph node biopsies under local anaesthesia

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ABSTRACT

Background: Surgical referrals for lymph node biopsies are common, majority for diagnostic purposes. The indications and the diagnostic yield vary for different sites. We conducted an audit of the lymph node biopsies done over a period of seven months.
Methods: The audit included 547 patients who underwent lymph node biopsies under local anesthesia in the department of general surgery over a seven-month period. Parameters such as overall diagnostic yield of lymph node biopsies, disease specific yield of lymph node biopsies with a primary focus on tuberculosis; site specific yield of lymph node biopsies and referral pattern for the request for lymph node biopsies were analysed.
Results: 324 samples (59.2%) yielded a definite diagnosis, which included haematological malignancy 102 (31.5%), infectious diseases 131 (40.5%), and 59 (18.5%) malignancy. The diagnostic yield of supraclavicular lymph nodes was found to be highest (72.45%) and the axillary group the lowest (39.8%). The referral pattern seen was 314 (57.4%) from General medicine, 149 (27.2%) from General Surgery, and 84 (15.4%) from Haematology. 130 (23.8%) samples were tested for tuberculosis; the highest yield, acquired from the cervical group (52.8%), lowest from the inguinal region (4%).
Conclusions: Our audit revealed significant diagnostic yield of lymph node biopsies from the supraclavicular region. Majority of them were of infectious aetiology and referred from General Medicine. This study supports the introduction of co-ordinated problem-based referral and management pathways for the management of patients with enlarged superficial lymph nodes, supported by regular audits of practice.

Keywords: Audit, Haematological malignancy, Infectious disease, Lymphadenopathy, Lymph node biopsy, Outpatients

INTRODUCTION

Lymph nodes are discrete ovoid lymphoid structures, surrounded by a capsule composed of connective tissues and a few fibrils that are widely distributed throughout the body. Any abnormality in size, consistency, or number, due to invasion by either inflammatory cells or neoplastic cells into the node, constitutes lymphadenopathy. The cause of lymphadenopathy is essentially due to either an immune response to an infective agent or inflammatory cells in infections involving the lymph nodes. Moreover, it may be due to infiltration of neoplastic cells carried to the node by lymphatic or blood circulation. Increase in the incidences of tuberculosis as a cause of lymph node enlargement has been documented worldwide.[1-9]

Considering the plethora of diseases that can cause lymphadenopathy, it is essential to define the pattern of disorder presenting primarily as lymph node enlargement

in a particular environment. Pattern of lymph node enlargement varies according to age group. Metastatic deposit is more common in adults, whereas it is rare in children. Reactive hyperplasia to minor stimuli has been reported as a significant cause of lymphadenopathy in children.[10]

Diagnosis in lymphadenopathy can be achieved with adjunctive investigations like fine needle aspiration cytology and core needle biopsies and surgical biopsies. Peripheral lymphadenopathies are easily detected by routine physical examination and are often biopsied as they are easily accessible for excision, which is a minor surgical procedure done under local anaesthesia.[11-12]

The objectives of the audit were to analyse the diagnostic yield of lymph node biopsies; the disease specific yield of lymph node biopsies with a primary focus on tuberculosis; the site specific yield of lymph node biopsies; and referral pattern for the request for lymph node biopsies.

METHODS

This study examined the diagnostic yield of lymph node biopsies conducted by the Department of General Surgery, Unit IV during a 7-month period from 1st May 2012 to 30th November 2012.

Inclusion criteria

All the consecutive patients that had been referred to the Department of General Surgery for the procedure of having a lymph node biopsy under local anesthesia.

Exclusion criteria

The patients who did not consent for the study were excluded.

A retrospective review of case notes of patients included in this study was done. The following details were obtained: name, hospital number, age, sex, adequacy of the sample, diagnostic or not, specific diagnosis, classification of the diagnosis, and department ordering the biopsy. Results were analyzed using SPSS Statistics 17.0.

Institutional review board (IRB) clearance was not required as this was a departmental surgical audit.

RESULTS

A total of 324 males and 223 females were included in the study accounting for a male to female ratio of 1.45:1 (Figure 1). A total of 547 lymph node biopsies were performed during the period of the study. Of the 547 samples that were sent to the Pathology Department for testing, 529 were adequate (96.7%), and 18 samples were inadequate in quantity for laboratory study (3.3%) (Figure 2).

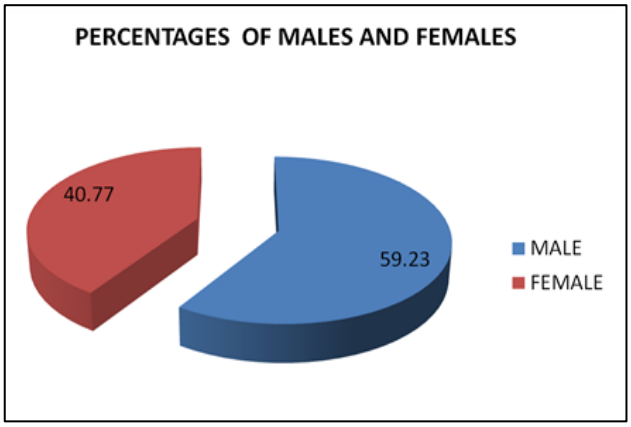

Figure 1: Gender distribution.

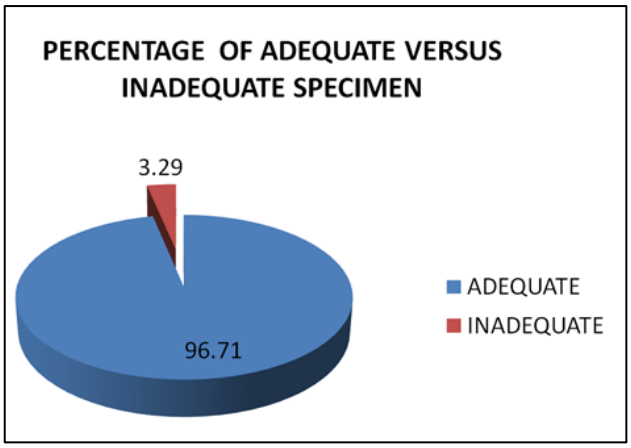

Figure 2: Adequacy of lymph node biopsies based on histopathological examination.

Three hundred twenty-four samples (59.2%) yielded a conclusive diagnosis and hence were diagnostic; 223 (40.8%) samples did not yield a conclusive diagnosis and hence, were non-diagnostic (Table 1).

Table 1: Diagnostic yield of lymph node biopsies.

	Axillary	Cervical	Supraclavicular	Inguinal	Not mentioned	Total
Diagnostic	62 (19.1%)	147 (45.4%)	71 (21.9%)	20 (6.2%)	24 (7.4%)	324
Not diagnostic	94 (42.2%)	78 (35.0%)	27 (12.1%)	8 (3.6%)	16 (7.2%)	223
Total	156	25	98	28	40	547

A total of 109 samples yielded a hematological malignancy (33.64%), 150 (46.29%) were diagnostic of an infectious disease, and 65 (20.00%) aided in the diagnosis of a malignancy (Figure 3). A total of 130 samples, (23.7%) tested positive for tuberculosis (Table 2).

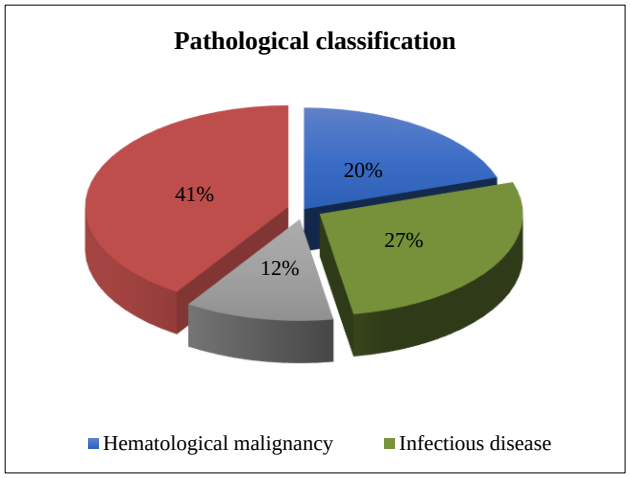

Figure 3: Disease specific distribution of lymph node biopsies.

Table 2: Site specific yield for tuberculosis.

Site of biopsy	N (%)
Cervical	66 (52.8)
Axillary	18 (14.4)
Supraclavicular	25 (20)
Inguinal	5 (4)
Unidentified	12 (8.8)

The highest yield was found to be from the group of supraclavicular nodes, accounting for 72.45% and the lowest was from the axillary lymph node group which was 39.8% (Table 3).

Table 3: Site-specific yield of lymph node biopsies.

Site of lymph node biopsy	Diagnostic yield (in %)
Supraclavicular	72.45
Inguinal	71.4
Cervical	65.34
Axillary	39.8
Site not mentioned	10

Of the 547 samples that were biopsied, 314 (57.4%) belonged to the Department of General Medicine and its sub specialties, 149 (27.2%) belonged to the department of General Surgery and its specialties, and 84 (15.4%) were directly referred from the department of Hematology (Figure 4).

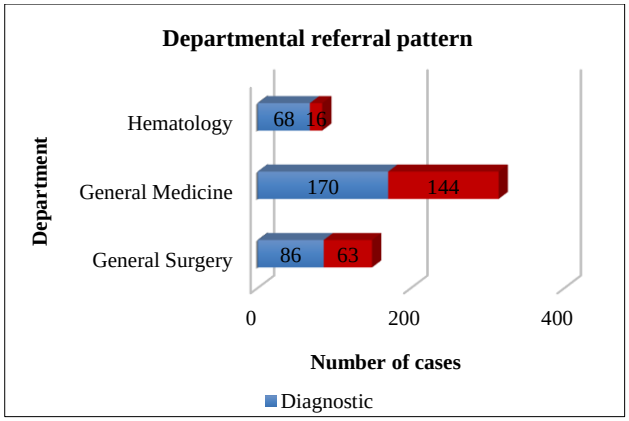

Figure 4: Referral pattern of lymph node biopsies.

DISCUSSION

The diagnostic accuracy of FNAC in metastatic disease varies from 87% to 97.9% and for lymphomas is 82%.[13,14] The sensitivity of FNAC for metastatic lesions to lymph nodes has varied from 97.9% to 100%, whereas the specificity has been found to be 100%.[13] The core-needle biopsy has a sensitivity of 89% and a specificity of 97%.[15] This present study reports an overall diagnostic yield of 59.2% and supports the world literature and was marginally lower than previously published data of Margolis et al, which had a diagnostic yield of 63% and of Doberneck of 70%.[16,17]

Supraclavicular lymph node excision biopsy had a diagnostic sensitivity of 100%, specificity of 97.6%, positive-predictive value of 83.3%, negative-predictive value of 100%, and accuracy of 97.8% (22%). This study had a diagnostic yield of 72.45% for supraclavicular lymph node biopsy as compared to Doberneck and Sinclair et al who showed a yield of 90% and 85.2% respectively. Therefore, if supraclavicular node is palpable, it should be biopsied in preference to other lymph node groups. The present study reports a yield of only 65.34% of cervical node biopsies other than the supraclavicular nodes, 39.8% for axillary nodes, and 71.4% for inguinal nodes. Margolis and associates reported no difference in the yield of 63% when comparing cervical, axillary, and inguinal node biopsies, whereas Sinclair reported a yield of 63.7% for cervical, 53.3% for axillary, and 72.7% for inguinal nodes.

A total of 130 samples tested positive for tuberculosis. The highest yield was found to be from the group of cervical nodes, accounting for 52.8% followed by supraclavicular lymph nodes (20%). Involvement of axillary and inguinal lymph node was 14.4% and 4% that is evident even in literature.[18-20]

This finding in tuberculosis is very much similar to world literature where we find that; excisional biopsy of the cervical group of lymph nodes had a higher yield when compared to any other site.[21]

Among the peripheral nodes, those in the upper part of the body (cervical, supraclavicular, axillary) are preferentially biopsied than lower limb nodes (popliteal, inguinal, or femoral) as the former are more likely to yield a more definitive diagnosis whereas the latter are often characterized by nonspecific reactive or chronic inflammatory changes and fibrotic changes.[22]

The overall diagnostic yield of supraclavicular lymph nodes was found to be highest (72.45%) and the axillary group the lowest (39.8%). This is very similar to the study done by Raymond et al, which showed a highest yield in supraclavicular lymph node (90%).[17]

The referral pattern seen in this study was 314 (57.4%) from General medicine and sub specialities, 149 (27.2%) from the department of General Surgery and its specialities, and 84 (15.4%) from the department of Haematology.

Introduction of a carefully selected screening and triage programme will help increase the overall diagnostic yield of lymph nodes and arrive at a diagnosis earlier.[2] There should be development of clinical algorithms, closer working practices of interdepartmental teams with improved lines of communication between the General Surgery departments and the other concerned departments.

CONCLUSION

Our audit revealed significant diagnostic yield of lymph node biopsies from the supraclavicular region. Majority of them were of infectious etiology and referred from the department of General Medicine. This study also supports the introduction of coordinated problem-based referral and management pathways for the management of patients with enlarged superficial lymph nodes, supported by regular audits of practice.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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