CLINICAL STUDY

PREDICTING MALIGNANCY IN CERVICAL LYMPH NODE: CLINICAL RESULTS

Elif Koçlu HETEMOĞLU ⓘD, MD; Selim Sermed ERBEK ⓘD, MD

Department Otorhinolaryngology, Medical Faculty of Başkent University, Ankara, Turkey

SUMMARY

Background: The history of the patient, examination findings and imaging modalities are important to determine the etiological factors in lymphadenopathies, A good knowledge of the predictive values of malignancy, prevents loss of time and unnecessary surgeries. The aim of this study was to evaluate the pathology results of patients who underwent excisional lymph node biopsy and to examine the parameters that can be used in predicting malignancy.

Methods: Patients who underwent excisional lymph node biopsy due to cervical lymphadenopathy were included in the study and patient files were retrospectively scanned. The demographic information of the patients and region, side, size, consistency, and localization of the lymph node were recorded. Preoperative screening techniques, postoperative complications and pathological diagnosis were also recorded. Parameters that can be used to predict malignancy, were determined from these data.

Results: The study included a total of 133 patients, comprising 60 (45.1%) males and 73 (54.9%) females. Malignant lesions were found at a significantly higher rate in patients aged >40 years (p=0.003). Supraclavicular, rigid and ≥3 cm lymphadenopathies had a high risk of malignancy, although not at a statistically significant level.

Conclusion: Age is a parameter that can be used in the prediction of malignancy in cervical lymphadenopathies.

Keywords: Cervical lymphadenopathy, malignancy prediction, neck masses

SERVİKAL LENF NODUNDA MALİGNİTE PREDİKSİYONU, KLİNİK SONUÇLARIMIZ

ÖZET

Amaç: Lenfadenopatilerde etyolojik faktörün değerlendirilmesinde hastanın anamnezi, muayene bulguları ve görüntüleme yöntemlerinin önemi büyüktür. Malignite prediktif değerlerinin iyi bilinmesi, gereksiz cerrahileri önlediği gibi hastaların vakit kaybetmesini de engeller. Bu çalışmamızın amacı eksizyonel lenf nodu biyopsisi işlemi uygulanan hastaların patoloji sonuçlarını değerlendirerek malignite prediksiyonunda kullanılabilecek parametreleri incelemektir.

Metod: Servikal lenfadenopati sebebi ile eksizyonel lenf nodu biyopsisi uygulanan hastalar çalışmaya dahil edilerek dosyaları retrospektif tarandı. Hastaların demografik bilgileri ve lenf nodunun bölgesi, tarafı, boyutu, kıvamı, lokalizasyonu kaydedildi. Hastalara uygulanan görüntüleme yöntemleri postoperatif komplikasyonlar ve patolojik tanılar not edildi. Bu verilerden malignite prediksiyonunda kullanılabilecek parametreler saptandı.

Bulgular: 60`ı (%45.1) erkek, 73`ü (%54.9) kadın, toplam 133 hasta çalışmaya dahil edildi. >40 yaş hastalarda malign lezyonlar istatistiksel olarak anlamlı oranda yüksek bulundu (p=0.003). Ayrıca supraklaviküler alanda yer alan, sert kıvamlı ve ≥3 cm lenfadenopatilerde istatistiksel olarak anlamlı olmamakla beraber daha yüksek oranda malignite görüldü.

Sonuç: Servikal lenfadenopatisi olan hastalarda yaş, malignite prediksiyonunda kullanılabilecek bir parametredir.

Anahtar Sözcükler: Servikal lenfadenopati, malignite prediksiyonu, boyun kitleleri

INTRODUCTION

Lymph nodes are immune system organs that contain dense lymphocytes and antigen-presenting cells. The human body has about 600 lymph nodes in different regions[1]. The increase in lymphoid tissue reaches a peak at puberty and then a slow atrophy process continues until the end of life[2-3].

Enlargement of one or more lymph nodes due to normal reactive causes or pathological processes is called lymphadenopathy. Lymph nodes have a significant growth capacity. The size of the lymph node may vary depending on the age of the patient, the localization of the lymph node and past immunological events[4]. Lymphadenopathies are commonly associated with infectious conditions, inflammatory processes or metabolic and neoplastic diseases[5]. Lymphadenopathies can be a source of morbidity and mortality if they originate from malignancy and autoimmune disease[6]. Anamnesis, examination findings of the patient and imaging

methods are important to evaluate the ethiological factors. In a previous study, the patient's age, duration and size of the lymph node were reported to be significantly related with neoplasia in the neck, and in the same study, age was the only significant factor in the prediction of malignancy[7].

The timing of lymphadenopathy excision is an important question. A good knowledge of the predictive values of malignancy, prevents patients from undergoing unnecessary surgeries. The purpose of this study was to evaluate the pathological results of excisional lymph node biopsies in our clinic and to examine the parameters that can be used in predicting malignancy.

MATERIAL and METHODS

The study included patients who underwent excisional lymph node biopsy by otorhinolaryngologists due to cervical lymphadenopathy between January 2004 - May 2015. The files of the patients were retrospectively scanned. It was observed from the patient files that lymphadenopathies which were not getting smaller after treatment and had imaging findings suggestive of malignancy were excised. The demographic information of the patients, and examination findings of the lymph node were recorded. Lymph node size was evaluated in two groups, as <3 cm and ≥3 cm. Lymph nodes were grouped acording to consistency as rigid, rigid fixed, soft and non-palpable. Localizations of lymph nodes were also evaluated according to neck regions. Imaging modalities, postoperative complications and pathological diagnoses were noted. The parameters that could be used in the prediction of malignancy were determined from these datas. Approval for the study was granted by the Local Ethics Committee. Since this was a retrospective study, there was no requirement for patient informed consent.

Statistical analyses were made using SPSS Version 20 software (IBM, New York, USA). The Chi square test was used to compare binary variables with statistical evaluation, and the Student's t test was used to compare the averages of independent groups.

RESULTS

Evaluation was made of a total 133 patients, comprising 60 (45.1%) males, and 73 (54.9%) females. The demographic data of the patients and the location, side, consistency, size and malignant-benign distributions of the biopsy materials are shown in Table 1.

The majority of patients were over 40 years of age. There was no statistically significant difference between the regional distributions of the lymph node and age. (p = 0.115). There was no significant difference between the location of the lymph node and malignant-benign distributions, although malignant lesions dominated the supraclavicular region in general and other regions had benign lesion dominance (Table 2). Due to the dominance of malignancy in the supraclavicular region, the neck region was separated into two groups as supraclavicular and other regions and the malignancy rates were compared between these two groups. The malignancy rates were higher in the supraclavicular region than other regions but there was no significant difference (p=0.077).

The mean age of the patients with malignant lesions was 54.57 ± 19.38 years, and the age of patients with benign lesions was 42.90 ± 19.96 years. The patients were divided into 3 groups as <18 years (pediatric age group), 18-40 years and > 40 years. The malignancy rates in these groups were examined. Malignant lesions were found at a significantly higher rate in patients aged > 40 years (p=0.003) (Table 3).

According to the lesion size, 2 groups were formed as <3 cm and ≥3 cm and the malignancy rates were compared. Benign lesions were predominant in the <3 cm group, and malignant lesions were determined at a higher rate in the ≥3 cm group, but the difference was not statistically significant (p = 0.08).

In the comparison of lesion consistency and malignancy rates, 52% of the rigid lesions, 55% of rigid-fixed lesions and 34% of soft lesions were malignant. There was no statistically significant difference, although the malignancy rate was higher in rigid and rigid-fixed lesions. (p = 0.245).

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When the pathological results were examined, the most common lesions without malignant benign distinction were reactive lymphadenitis (n: 49, 36.8%), lymphoma (n: 41, 30.8%), metastasis (n: 13, 9.8%), lymphoid hyperplasia (n: 7, 5.3%), and carcinoma invasion (n: 5, 3.8%). The most common benign lesion was reactive lymphadenitis and the most common malignant lesion was lymphoma.

Ultrasonography (73.5%), magnetic resonance imaging (32.1%) and computed tomography (15.9%) were the most common preoperative imaging methods.

Postoperative complications were seen in 5 patients (3.8%). These complications were recorded as hyperemia (n = 1), edema (n = 1), hematoma (n = 1), seroma (n = 1) and discharge (n = 1) around the incision. These complications were treated without surgery.

Table 1: Demographic data of the patients and biopsy material findings

Gender (M/F)	60/73	(45.1%/54.9%)
Age (years)(mean)	48.3±20.51	
<18	12	(9%)
18-40	32	(24.1%)
>40	89	(66.9%)
Location		
Level 1	13	(9.8%)
Level 2	31	(23.3%)
Level 3	24	(18%)
Level 4	8	(6%)
Level 5	24	(18%)
Level 6	1	(0.8%)
Supraclavicular	30	(22.6%)
Intraparotideal	2	(1.5%)
Side		
Right	70	(52.6%)
Left	62	(46.6%)
Middle	1	(0.8%)
Consistency		
Rigid	74	(55.6%)
Rigid fixed	12	(9%)
Soft	44	(33.1%)
Non palpable	1	(0.8%)
Size		
<3 cm	66	(49.6%)
≥3 cm	67	(50.4%)
Pathological diagnosis		
Malignant	61	(45.8%)
Benign	72	(54.2%)

(M: Male, F: Female)

Table 2: Location of the lymph nodes and malignant-benign distributions

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Supraclavicular	Intraparotideal	Total	p value
Malignant	5 (38%)	10 (32%)	14(58%)	5(62%)	8(33%)	1(100%)	18(60%)	0	61(45%)	
Benign	8 (62%)	21(68%)	10(42%)	3(38%)	16(66%)	0	12(40%)	2(100%)	72(55%)	0.092
Total	13	31	24	8	24	1	30	2	133	

Table 3: Age groups and malignant-benign distributions

	Age <18	Age 18-40	Age >40	Total	p value
Malignant	4 (33%)	7 (22%)	50 (56%)	61 (46%)	
Benign	8 (66%)	25 (78%)	39 (44%)	72 (54%)	0.003
Total	12	32	89	133	

DISCUSSION

Growing lymph nodes disturb patients in both adult and pediatric age groups and require careful evaluation by the physician. Most are benign in nature and tend to decline spontaneously or with treatment. However, excisional biopsy is the most accurate diagnostic approach for lymph nodes that cannot be treated with medical treatment and creates a malignant impression. There is a view that the given treatments should be limited to 2 weeks in order not to prolong the diagnosis process[8]. Fine needle aspiration biopsy or incisional biopsy often do not provide pathological diagnosis of the lymph node. It is also not preferred because of the wasted time for the patient and the complications that may occur depending on the procedure[9-10]. Knowing the pre-defined malignancy predictive values allows clinicians to make a fast and accurate diagnosis.

There have been studies to determine malignancy criteria in lymphadenopathies. In the study performed by Çelenk et al., advanced age and male gender were associated with malignancy, and long-term and bilateral lymph nodes were associated with benign lesions[11]. In the multivariate regression analysis of 251 patients, advanced age, generalized lymphadenopathy, presence of known malignancy, and fixed lesion were associated with malignancy[12]. In another study in which 550 patients were scanned, older age, male gender and white race were found to be higher risk for malignancy[13]. Studies in the pediatric age group have shown that the supraclavicular area, lymph node enlargement of >2cm and multiple regional lesions have been reported to be associated with malignancy[14-15]. In the current study, age was statistically significant in terms of predicting malignancy. Furthermore, malignancy rates were found to be higher in the supraclavicular area, in rigid and ≥3 cm lymphadenopathies, although not statistically significant. According to these results, 54% of excised lymph nodes were benign and this rate is high. It can be concluded that a more detailed evaluation should be made before lymph node excision.

In the evaluation of lymphadenopathies, besides clinical features, radiological examinations are currently widely used. Ultrasonography (USG) is the first radiological examination to be performed, especially because it is non-invasive and easy to apply. Therefore, USG is the most widely used imaging method in patients with lymphadenopathy. In the current

study, 73.5% of patients had ultrasonographic imaging. Previous studies have shown that certain USG findings (hypoechoic pattern, reticular pattern, calcification, low residuality, and pulsatility) can be used to predict malignancy[16].

In this study, parameters were examined that could be used in the prediction of malignancy in patients with lymphadenopathy. The results showed that the risk of malignancy was higher in patients > 40 years of age. There was also found to be a high risk of malignancy in the supraclavicular area, in rigid, and ≥3 cm lymphadenopathies, which was not statistically significant. The lack of statistical significance in these parameters could have been due to the low number of patients. Therefore, further studies with larger patient populations could provide more comprehensive results.

ACKNOWLEDGEMENTS

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