



A Comparison of Fine Needle Aspiration Biopsy and Excisional Biopsy Results in the Diagnosis of Lymphoma Confined to the Head and Neck Region

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Abstract

Objective: To compare fine needle aspiration biopsy (FNAB) and excisional biopsy results in the diagnosis of head and neck lymphomas and to evaluate the effectiveness of FNAB.

Methods: The medical files of 52 patients diagnosed with lymphoma in our clinic between September 2011 and January 2015 were retrospectively examined. Demographic characteristics, presenting complaints, hematologic parameters, fine needle aspiration biopsy (FNAB) results, and excisional biopsy results of the patients were recorded. The patients were divided into 4 groups based on their FNAB cytology results: i) malignant cytology, ii) suspicious for lymphoid neoplasia, iii) mixed lymphoid cell population, and iv) non-diagnostic cytology. FNAB was performed under ultrasound guidance.

Results: The average age within our series, which consisted of 37 male and 15 female patients, was 46.37 (range 8–82 years). Neck mass was the presenting symptom in 30 patients (57.6%), while it was detected during examination of other symptoms in 22 patients (42.3%). Fever was not observed in any of the patients, whereas weight loss was present in 12 patients (23%), fatigue in 5 patients (9.6%), and night sweats in 5 patients (9.6%). Following excisional biopsy, Hodgkin lymphoma was diagnosed in 28 patients and non-Hodgkin lymphoma was diagnosed in 24 patients.

Conclusion: The utility of FNAB in the diagnosis of lymphoma in the head and neck region is discussed. FNAB may not be sufficient unless immunofluorescence examination is also conducted. FNAB may lead to a considerable delay in establishing a definitive diagnosis. In the case of clinical suspicion, excisional biopsy is recommended without performing FNAB.

Keywords: Lymphoma, fine needle aspiration biopsy, excisional biopsy

Introduction

Lymphomas, which constitute approximately 5% of malignant head and neck neoplasias, may be nodal or extranodal. The head and neck region is the second most common localization of extranodal lymphomas in the body, after those localized to the gastrointestinal system. The majority of extranodal lymphomas are B-cell non-Hodgkin lymphomas (non-HLs) (1).

Hodgkin lymphomas (HLs) are generally observed in the third decade of life. They are more commonly found in males than in females. Diagnosis is established through observation of Reed-Sternberg cells and mononuclear Hodgkin cells in biopsy material (2). Patients present with fever, weight loss, night sweat, and neck mass. Table 1 illustrates the World Health Organization classification of HL (3, 4).

Non-HLs are frequently observed in the head and neck region. There are three localizations in the head and neck region: intranodal, extranodal, and extranodal extralymphatic (5, 6). Although the etiology of lymphomas of the head and neck region is not entirely known, ionized radiation, auto-immune diseases, and Epstein-Barr virus (EBV) have been suggested (7).

Diagnosis of lymphoma in the head and neck region is established by excisional biopsy. Recently, image-guided biopsies were proved to provide sufficient material for diagnosis and subgrouping. Image-guided biopsies have diagnostic and therapeutic advantages (8).

The aim of this study is to compare fine needle aspiration biopsy (FNAB) and excisional biopsy results in the diagnosis of head and neck lymphomas and to evaluate the effectiveness of FNAB.

Methods

The medical files of patients with lymphoma of the head and neck region diagnosed between 2011 and 2015 were examined retrospectively. Presenting symptoms, hematologic parameters, fine needle aspiration biopsy (FNAB), and excisional biopsy results were recorded.

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Diagnostic techniques were noted for all patients. Only patients who underwent FNAB and excisional biopsy were included in the study. Patients who directly underwent excisional biopsy without FNAB were excluded from the study. Hemoglobin and hematocrit values, leukocyte counts (with differential), erythrocyte sedimentation rates (ESR), and C-reactive protein (CRP) levels were examined.

Fine needle aspiration biopsy was performed by the same radiologist with a 16 gauge needle under ultrasound guidance. After the aspirate material was transferred to paraffin blocks, it was sectioned with a thickness of 3–4 micrometers and examined by the same pathologist. The FNAB cytology results were divided into 4 groups: i) malignant cytology, ii) suspicious for lymphoid neoplasia, iii) mixed lymphoid cell population, and iv) non-diagnostic cytology (Table 2). Excisional biopsy was performed for subtyping of the lymphoid neoplasia.

All patients provided informed consent after receiving a detailed description of the study. Our study was approved by the local ethics committee.

Results

Fifty-two patients (37 males, 15 females) diagnosed with lymphomas of the head and neck region were enrolled in the study. The mean age was 46.37 years (range 8 to 82 years). Neck mass was one of the presenting signs in 30 patients (57.7%), whereas it was detected during evaluation of other complaints in 22 patients (42.3%). Fever was not observed in any patients; however, weight loss was present in 12 patients (23%), fatigue in 5 patients (9.6%), and night sweats in 5 patients (9.6%) (Table 3).

The neck mass was localized in the posterior cervical triangle in 11 patients (right side in 7 patients and left side in 4 patients) and in level II in 19 patients (left side in 10 patients and right side in 9 patients).

The mean hemoglobin value of the patients was 12.9 g/dL, the mean leukocyte value was 7800/mm³, the mean lymphocyte value was 1880/mm³, and the mean thrombocyte count was 267.000/mm³. No abnormalities were observed in the hematological parameters of any patient. The ESR and CRP values of all patients were within normal limits.

The results of FNAB were as follows: malignant cytology in 12 patients, suspicious for lymphoid neoplasia in 10 patients, mixed lymphoid cell population in 28 patients, and non-diagnostic cytology in 2 patients.

Lymph nodes demonstrated to be suspicious via ultrasound examination were surgically excised with intact capsules under local anesthesia. Following histopathological examination, HL was diagnosed in 24 patients and non-HL in 28 patients (Table 4). Mixed cellularity was the most common subtype of HL (14 patients, 26.9%), whereas diffuse large B-cell lymphoma was the most common subtype of non-HL (14 patients, 26.9%).

Discussion

Fine needle aspiration biopsy is an important diagnostic tool in the management of cervical masses, and its diagnostic value for

Table 1. Hodgkin lymphoma classification of the World Health Organization

1. Hodgkin lymphoma
2. Nodular lymphocyte predominant Hodgkin lymphoma
3. Classical Hodgkin lymphoma
- Nodular sclerosing
- Mixed cellular
- Classic lymphocyte-rich
- Lymphocyte-depleted

Table 2. Fine needle aspiration biopsy results

FNAB RESULTS	n, (%)
1- Non-diagnostic cytology	2 (%3.8)
2- Mixed lymphoid cell population	28 (%53.8)
3- Suspicious for lymphoid neoplasia	10 (%19.2)
4- Malignant cytology (compatible with lymphoid neoplasia)	12 (%23)

Table 3. Presenting symptoms and signs

Presenting symptoms and signs	n, (%)
1- Neck mass	30 (57.7%)
2- Weight loss	12 (23%)
3- Fatigue	5 (9.6%)
4- Night sweat	5 (9.6%)
5- Fever	0 (0%)

Table 4. Histopathological examination results

Histopathological examination	Number of patients n, (%)
Classical Hodgkin lymphoma (mixed cellular)	14 (%26.9)
Classical Hodgkin lymphoma (lymphocyte- rich)	10 (%19.2)
Peripheral T-cell lymphoma	2 (%3.8)
Diffuse large B-cell lymphoma	14 (%26.9)
B-cell, Non-Hodgkin lymphoma	6 (%11.5)
Follicular lymphoma	3 (%5.8)
Anaplastic large B-cell lymphoma	3 (%5.8)

patients with cervical malignancy is known to be greater than 90% (9,10). However, contradictions are observed when it is utilized for lymphoma. Additional use of adjunctive techniques, including flow cytometry and immunohistochemistry, may increase the diagnostic value of this technique (11-13). However, when performed under image-guidance, the diagnostic value of FNAB was reported to increase significantly (8). Although FNAB is commonly used in lymphoma patients, many clinicians consider it to be an insufficient procedure (1).

Roh et al. (14) reported that FNAB successfully diagnosed 41 of 109 patients with lymphoma. In the same study, 23 patients were diagnosed with “suspicious,” 20 patients with “atypical,” 10 patients with “benign,” and 6 patients with “non-diagnostic”

cytology through FNAB. In another study conducted by Hehn et al. (15), lymphoma subgrouping with FNAB correlated with the subgrouping with definitive histopathological examination at a rate of only 12%. Similarly, in the same study (including patients diagnosed with only the general term “lymphoma”), it was specified that it was not possible to provide a specific cytological diagnosis to guide treatment in 88% of patients. This nonspecified diagnoses included “lymphoma,” “suspicious for lymphoma,” and “atypical/abnormal lymph nodes.” These cytological results cannot guide the treatment of patients, and further examinations are necessary. Similarly, in our series, FNAB remained insufficient in terms of subgrouping, and it was not possible to choose a treatment modality according to the FNAB results. In a study conducted by Long et al. (16), 117 patients were analyzed, and the FNAB sensitivity was reported to be 60%. Similarly, in our study, it was possible to diagnose 12 of 52 patients; these results were low compared to previous reports. The limited number of patients may be responsible for this difference. As discussed above, FNAB is insufficient in terms of establishing a definitive diagnosis. FNAB may also lead to misdiagnosis (a specific but different subgroup) of lymphoma (15). The sensitivity of the FNAB technique is not sufficient in head-neck lymphomas. The examination does not aid diagnosis and extends the time before the start of treatment; hence, it may lead to a considerable time delay for patients (1, 17).

Despite the increasing popularity of the FNAB technique, our results have showed that it remains insufficient for the diagnosis and treatment of head and neck lymphomas, and excisional biopsy is a more appropriate and accepted method.

Conclusion

The advantage of FNAB in the diagnosis of lymphoma in the head and neck region is discussed. When immunofluorescence examination cannot be conducted, FNAB may not be sufficient. FNAB may cause a considerable delay in establishing a final diagnosis. In the case of clinical suspicion, excisional biopsy is recommended without performing FNAB.

Ethics Committee Approval: Ethics committee approval was received for this study from local ethics committee.

Informed Consent: Informed consent was obtained from patients who participated in this study.

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