

# Solitary large malignant lymphoma in the head and neck region

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**Abstract.** The present study examined the clinical characteristics of patients with a final diagnosis of solitary large malignant lymphoma of the head and neck after surgery. Between January 2015 and December 2022, 13 patients with a final diagnosis of solitary large malignant lymphoma of the head and neck after surgery were enrolled. The most common symptom of solitary large malignant lymphoma was a neck mass (n=11; 84.6%). The most common sites of the head and neck were neck level II (eight patients), neck level IV (two patients), parotid glands (two patients) and the tongue (two patients). The number of malignant lymphomas was as follows: 11 patients had one large tumor and two patients had two large tumors. The mean tumor size was 4.0±1.3 cm (range; 2.7-6.8 cm). Among the two patients with two lymphomas, the size of the second neck mass was 3.2 cm in one patient and 2.7 cm in the other patient. The most common type of solitary large malignant lymphoma was diffuse large B-cell lymphoma (n=6, 46.2%). A total of 12 patients are currently under follow-up without disease recurrence after treatment completion and one patient diagnosed 1 month ago is currently undergoing radiation therapy. The follow-up period was 47.3±19.0 months (range; 1-62 months). The possibility of solitary large malignant lymphoma of the head and neck should be considered. As it is difficult to accurately diagnose solitary large malignant lymphoma before surgery, surgical resection is required for differentiation from other diseases.

## Introduction

Neck mass can develop due to infectious, inflammatory, congenital, traumatic, benign, or malignant causes (1). Exclusion of other diseases is essential for the accurate diagnosis of neck mass (1-4).

Lymphoma accounts for 12% of all malignant tumors occurring in the head and neck region and is the third most common malignant tumor after squamous cell carcinoma and thyroid cancer (5). Lymphomas are generally classified into Hodgkin lymphoma and non-Hodgkin lymphoma (1,3,5). Hodgkin lymphoma typically occurs in the lymph nodes of the neck, while non-Hodgkin lymphoma can spread to extranodal sites, including the major salivary glands, paranasal sinuses and Waldeyer ring (1). Non-Hodgkin lymphoma accounts for ~90% of all lymphoma (5). Treatment of malignant lymphoma is very diverse and treatment is only possible with an accurate diagnosis (5,6). Treatment of malignant lymphoma is very diverse and treatment is only possible with an accurate diagnosis (6). The prognosis of patients with early-stage disease was improved compared with that of patients with late-stage disease (5).

In malignant lymphoma, multiple neck masses are one of the most common manifestations (1,4). However, there have been recent cases where a solitary large neck mass was diagnosed as malignant lymphoma on definitive biopsy. Therefore, the present study examined the clinical characteristics of patients with a final diagnosis of solitary large malignant lymphoma in the head and neck region following surgery at a hospital.

## Patients and methods

The present study received approval from the Institutional Review Board of Chonnam National University Hwasun Hospital (approval no. CNUHH-2023-021). Patients with a final diagnosis of solitary large malignant lymphoma in the head and neck region after surgery between January 2015 and December 2022 were enrolled. All cases that did not meet this criteria were excluded.

Clinical data obtained from the patients were reviewed, including sex, age, past medical history, symptoms, duration of symptoms, site, number and size of malignant lymphoma, preoperative fine-needle aspiration cytology (FNAC), preoperative diagnosis, final histopathologic results after surgery, postoperative treatment, postoperative complications, current status and follow-up.

One or more radiological examinations, including computed tomography, magnetic resonance imaging and ultrasound, were conducted for all patients before surgery to assess the extent of the lesion and assist with treatment planning. All surgical specimens were confirmed by histopathological examination with immunophenotyping.

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Table I. Clinical characteristics of patients with solitary large malignant lymphoma in the head and neck region.

Characteristic	Malignant lymphoma (n=13)
Sex (male:female)	8:5
Age (years)	15-80 (50.7±23.2)
Main symptom	
Neck mass	11 (84.6%)
Duration of symptoms (months)	0.2-12 (2.4±3.4)
Location (right:left)	6:7
Neck site (II:IV:parotid glands:tongue)	8:2:2:2*
Number of malignant lymphomas (one:two)	11:2
Tumor size (cm)	2.7-6.8 (4.0±1.3)
FNAC results	FNAC patients (n=11)
Reactive lymphadenitis	4
Atypical lymphoid lesion	3
Non-diagnostic	3
Poorly differential malignancy	1
Preoperative diagnosis	
Benign neck mass	7
Malignant lymphoma	3
Parotid tumor	2
Metastatic carcinoma	1
Final histopathologic results	
Diffuse large B-cell lymphoma	6 (46.2%)
Follicular lymphoma	3 (23.1%)
Classic Hodgkin lymphoma	2 (15.4%)
Angioimmunoblastic T-cell lymphoma	1 (7.7%)
Marginal zone B-cell lymphoma	1 (7.7%)
Postoperative treatment	Postoperative treatment (n=11)
Chemotherapy	8
Radiation therapy	2
Chemotherapy + Radiation therapy	1
Follow-up (months)	1-62 (47.3±19.0)

\*One patient had masses both on the tongue and at neck level II. FNAC, fine-needle aspiration cytology.

## Results

The clinical findings of 13 patients with solitary large malignant lymphoma of the head and neck are summarized in w I. Of the 13 patients with solitary large malignant lymphoma, eight were male and five female. The mean age of the patients was 50.7±23.2 years (range; 15-80 years). Examination of past medical history identified three patients with hypertension, one with angina and one with liver cirrhosis.

The most common symptom of solitary large malignant lymphoma was a neck mass (n=11; 84.6%). Two patients with malignant lymphoma of the tongue complained of foreign body sensation in the throat (n=1) and coughing (n=1). None complained of B symptoms such as fever, chill and weight loss. The duration of symptoms was 2.4±3.4 months (range; 0.2-12 months). Overall, 6 patients (46.2%) had right-sided malignant lymphoma and seven patients (53.8%) had left-sided malignant lymphoma. The most common sites of solitary large

malignant lymphoma in the head and neck region were neck level II in eight patients, neck level IV in two patients, parotid glands in two patients and the tongue in two patients. One patient had masses both on the tongue and at neck level II (Fig. 1).

The number of malignant lymphomas was as follows: 11 patients had one large tumor and two patients had two large tumors. The mean tumor size was 4.0±1.3 cm (range; 2.7-6.8 cm). Among the two patients with two lymphomas, the size of the second neck mass was 3.2 cm in one patient and 2.7 cm in the other. Preoperative FNAC was performed on 11 patients (84.6%). FNAC results identified four patients with reactive lymphadenitis, three patients with atypical lymphoid lesion, three patients with non-diagnostic results and one patient with poorly differential malignancy. The preoperative diagnosis (based on imaging tests, physical examination and FNAC results) was benign neck mass in seven cases, malignant lymphoma in three cases, parotid tumors in two cases and metastatic carcinoma in one case.

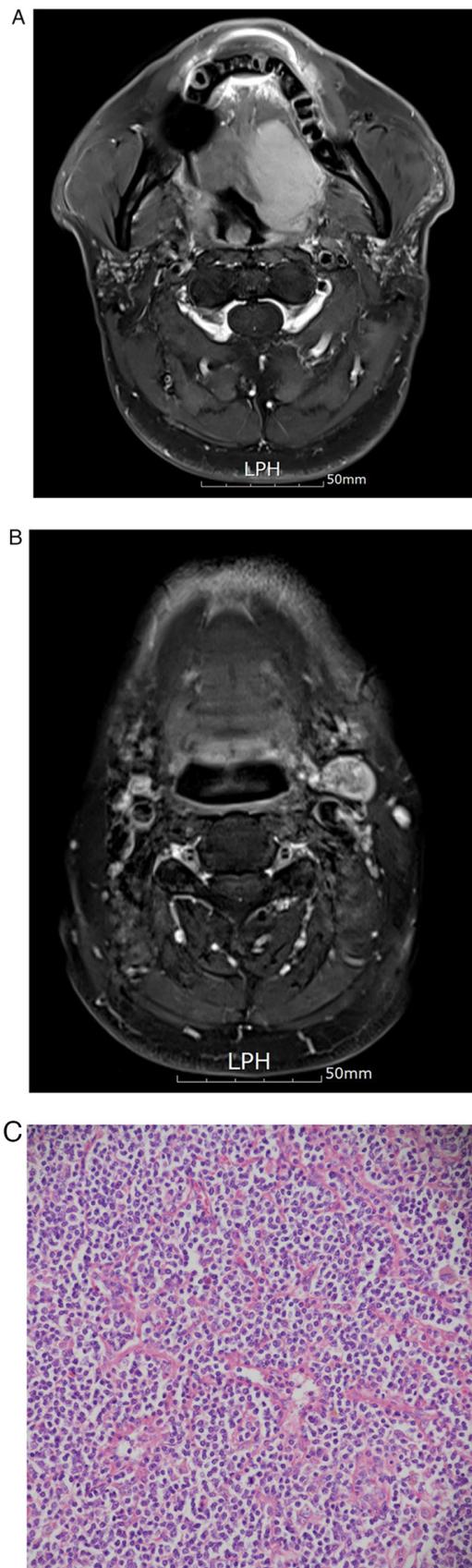


Figure 1. On magnetic resonance imaging examinations, a 55-year-old male patient presented with huge lymphoma both (A) on the tongue and (B) at neck level II. (C) The final histopathologic biopsy result shows complete architecture effacement without residual follicles. Angioimmunoblastic T-cell lymphoma cells typically exhibit small to intermediate-sized nuclei with mild atypia and clear cytoplasm (hematoxylin and eosin staining; magnification, x400).

All patients underwent surgical resection under general anesthesia and were diagnosed with malignant lymphoma based on the final histopathologic biopsy. There were no major complications after surgery. The most common type of solitary large malignant lymphoma was diffuse large B-cell lymphoma (n=6; 46.2%), followed by follicular lymphoma (n=3), classic Hodgkin lymphoma (n=2), angioimmunoblastic T-cell lymphoma (n=1) and marginal zone B-cell lymphoma (n=1).

A total of 11 patients (84.6%) received postoperative treatment, including chemotherapy (n=8), radiation therapy (n=2), or both (n=1). The remaining two patients underwent periodic follow-up without any treatment. A total of 12 patients are currently under follow-up without disease recurrence after the completion of treatment and one patient diagnosed 1 month ago is currently undergoing radiation therapy. The follow-up period was 47.3±19.0 months (range; 1-62 months).

### Discussion

In the present study, analysis of solitary large malignant lymphoma in the head and neck region demonstrated that neck mass was the most common symptom and mainly occurred at neck level II. Of the 13 patients with malignant lymphoma, 11 of them had a single large neck mass with a mean size of 4.0 cm. The remaining two patients had two neck masses and all four neck masses were larger than 2.7 cm. The most common type of solitary large malignant lymphoma was diffuse large B-cell lymphoma (46.2%).

Although various tests such as FNAC, imaging tests and blood tests were performed, only three patients (23.1%) were diagnosed as having malignant lymphoma before surgery. FNAC is a highly accurate, safe and cost-effective method, which is widely used in initial tests for the histopathological evaluation of neck masses (1). However, it is not recommended for the diagnosis of malignant lymphoma because the tumor tissue architecture cannot be obtained (1,6). Based on the FNAC results of the present study, malignancy was found in only one case and atypical lymphoid lesions were suspected in three cases.

On imaging tests, malignant lymphoma is characterized by a round-shaped morphology with a size of >1 cm and multiple or conglomerate neck lymph nodes (4,7). In the present study, the possibility of malignant lymphoma before surgery was not considered because it mainly appeared as a solitary large neck mass on imaging tests.

Accurate diagnosis and treatment of solitary large malignant lymphoma requires multidisciplinary collaboration (5,6). The histopathologic examination through surgical excision and subtype confirmation through immunophenotyping are essential (1-7). Treatment for malignant lymphoma of the head and neck may include systemic chemotherapy with or without radiation therapy. Immunotherapy, high-dose chemotherapy and stem cell transplant are also treatment options (1,3,5).

All patients survived without recurrence of malignant lymphoma except for one patient who was recently diagnosed and is receiving treatment. In addition, two patients with pediatric-type follicular lymphoma are being followed up without any recurrence and without additional treatment other than surgery.

In summary, a solitary large neck mass should be considered as a differential disease of malignant lymphoma in the head and neck region and histopathologic results obtained through surgical excision could accurately confirm the diagnosis.

The present study has limitations in that the retrospective nature of the study, which may introduce bias in data collection and analysis. Additionally, the reliance on surgical resection for diagnosis may not be feasible in all cases and may limit the applicability of the findings to patients who are not surgical candidates.

The possibility of solitary large malignant lymphoma in the head and neck region should be considered. As it is difficult to accurately diagnose solitary large malignant lymphoma before surgery, surgical resection is required to differentiate it from other diseases.

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### Availability of data and materials

The data generated in the present study may be requested from the corresponding author.

### Authors' contributions

DHL and DNL conducted and designed the research. DHL and DNL confirm the authenticity of all the raw data. DHL and SCL performed the experiments, analyzed data and wrote the paper. DHL, DNL and JYK provided technical support and designed the tables. All authors contributed to the article and all authors read and approved the final manuscript.

### Ethics approval and consent to participate

The present study received approval from the Institutional Review Board of Chonnam National University Hwasun Hospital (Jeonnam, Republic of Korea; approval no. CNUHH-2023-021). Informed patient consent was waived due to this being a retrospective study of case records.

### Patient consent for publication

Not applicable.

### Competing interests

The authors declare that they have no competing interests.

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