ORIGINAL ARTICLE

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Clinical characteristics, pathological distribution, and prognostic factors in non-Hodgkin lymphoma of Waldeyer's ring: nationwide Korean study

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Background/Aims: In Asia, the incidence of non-Hodgkin lymphoma (NHL) has increased in recent decades. Waldeyer's ring (WR) is the most common site of NHL involving the head and neck. In this study, the pathological distribution of WR-NHL and its clinical features were analyzed retrospectively.

Methods: From January 2000 through December 2010, we analyzed the medical records of 328 patients from nine Korean institutions who were diagnosed with WR-NHL.

Results: The study group comprised 197 male and 131 female patients with a median age of 58 years (range, 14 to 89). The rate of localized disease (stage I/II) was 64.9%, and that of low-risk disease (low/low-intermediate, as defined by the International Prognostic Index) was 76.8%. Diffuse large B-cell lymphoma (DLBCL; 240 patients, 73.2%) was the most common pathologic subtype, followed by peripheral T-cell lymphoma (14 patients, 4.3%) and nasal NK/T-cell lymphoma (14 patients, 4.3%). WR-NHL occurred most frequently in the tonsils (199 patients, 60.6%). Extranodal involvement was greater with the T-cell subtype (20 patients, 42.5%) compared with the B-cell subtype (69 patients, 24.5%). Multivariate analyses showed that age ≥ 62 years, T-cell subtype, and failure to achieve complete remission were significant risk factors for overall survival.

Conclusions: DLBCL was found to have a higher incidence in Korea than those incidences reported by other WR-NHL studies. T-cell lymphoma occurred more frequently than did follicular lymphoma. T-cell subtype, age ≥ 62 years, and complete remission failure after first-line treatment were significant poor prognostic factors for overall survival according to the multivariate analysis.

Keywords: Head and neck; Non-Hodgkin lymphoma; Diffuse large B-cell lymphoma; T-cell lymphoma

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INTRODUCTION

The prevalence of non-Hodgkin lymphoma (NHL) has increased in the last decade [1]. Immune-suppression, genetics, and exposure to chemical agents have contributed to the increasing incidence of NHL [2-4]. NHL is not limited to lymph node progression; in contrast to Hodgkin lymphoma, it may arise from or involve extranodal organs in approximately one-third of cases. Waldeyer's ring (WR) is the most popular site of involvement among NHLs presenting in the head and neck. WR originates from lymphoid tissues surrounding the digestive and respiratory systems, including those around the Eustachian tube, upper palatine tonsils, nasopharynx, oropharynx, salivary glands, and sublingual sites. In Asia, NHL involving WR (WR-NHL) has increased recently [5-10].

The increased understanding of the pathology and physiology of lymphoma has led to changes in its classification. The World Health Organization (WHO) classification of lymphomas was revised in 2001 and again in 2008 [11,12]. However, recent studies of lymphomas involving WR were performed in few lymphoma subtypes and under limited circumstances. Therefore, those studies were limited in their ability to determine the overall characteristics of WR-NHL. In this study, the clinical characteristics and pathological distribution of WR-NHL in Korea were analyzed retrospectively according to the 2001 and 2008 WHO lymphoma classifications.

METHODS

From January 2000 through December 2010, 328 Korean patients pathologically confirmed as WR-NHL from nine independent institutions were reviewed retrospectively. Pathologic diagnosis was determined according to the 2001 and 2008 WHO classifications of lymphomas [11,12]. Patients were classified by the Ann Arbor staging system according to the results of computed tomography (CT) scans, positron emission tomography (PET)-CT, bone marrow biopsy, and cerebrospinal fluid analysis if necessary. Clinical and laboratory parameters including age, sex, Eastern Cooperative Oncology Group (ECOG) performance status, and biochemical laboratory results were evaluated. The disease stage and extranodal involvement were also investigated.

Patients with localized disease were classified into five groups according to their treatment: 1) supportive care; 2) chemotherapy alone; 3) chemotherapy plus radiotherapy; 4) radiotherapy alone; and 5) surgical resection. The surgical resection group included patients who underwent chemotherapy or radiotherapy after surgery. We evaluated the treatment results and survival of each group using serial CT scans.

Progression-free survival (PFS), disease-free survival (DFS), and overall survival (OS) were analyzed using the Kaplan-Meier and the Cox proportional regression methods. PFS was calculated as the period from the first day of treatment to the date of disease progression or death from any cause. DFS was calculated as the period from the date of complete remission (CR) to that of relapse or death while in CR. OS was calculated as the period from the first day of treatment to the date of death from any cause. The results were expressed as means with 95% confidence intervals (CIs) where appropriate, and $p < 0.05$ was considered indicative of statistical significance. Statistical analysis was performed using the PASW version 18.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

Patients

The median patient age was 58 years (range, 14 to 89). The male:female ratio of the 328 patients was 1.5:1. More than half of the patients (64.9%) presented with localized disease (Ann Arbor stage I or II). In particular, the majority of B-cell lineage NHL cases presented as localized disease (71.1%). T-cell lineage NHL cases more frequently showed disseminated disease (57%) compared with other NHLs. Most patients were in the low/low-intermediate risk group (252/328 patients, 76.8%) according to the International Prognostic Index (IPI) and had good performance status (ECOG 0; 311/328 patients, 94.8%). Serum lactate dehydrogenase (LDH) levels were primarily in the normal range (280/328 patients, 85.4%). B symptoms (> 10% weight loss in 3 months, night sweats, and fever) were seen in