

## RESEARCH ARTICLE

# Incidence of Head and Neck Lymphoma in Guilan Province, Iran

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### Abstract

The aim of this research was to describe the incidence and histopathological subtypes of head and neck lymphoma in Guilan province, Iran. In this retrospective study, all cases of head and neck cancers registered in Iranian Cancer Registry Program in Guilan province of Iran from 2004 to 2009 were obtained and included in the analysis. Out of 1,510 cases, 169 (11.2%) were reported as lymphomas (87 cases of non-Hodgkin, 67 cases of Hodgkin, and 13 cases of unknown type). The mean ages of males and females diagnosed with Hodgkin's lymphoma were 30.4 and 28.7 years, respectively. For non-Hodgkin's lymphoma the respective figures were 50.5 and 49.3 years old. Among various histological subtypes of non-Hodgkin's lymphoma, the diffuse large B-cell type (74.2%) was the most frequent while immunoblastic lymphoma (1.1%) was the least frequent. Nodular sclerosis (58.2%) and mixed cellularity (18.0%) types were most frequent among Hodgkin's lymphomas.

**Keywords:** Head and neck neoplasm - lymphomas - Hodgkin - non-Hodgkin - incidence

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### Introduction

Lymphoma is the seventh malignancy in the world (Jemal et al., 2010) and the second most common malignant tumor in the head and neck area (Mohtasham et al., 2011), and according to surveys of Cancer Registry Center in the Ministry of Health in 2009, non-Hodgkin's lymphoma is among 10 most common cancers in Iran (Iranian Annual of national Cancer registration Report. Tehran and for Health directory; Radmard, 2010). Lymphoma is of two main types: Hodgkin and non-Hodgkin's lymphoma. Low grade, intermediate grade, and high grade (Neville, 2009).

One of the main etiologic factors in processing of Lymphoma was viral infections especially EBV and is one of the contributor of HIV disease (Radmard, 2010). Lymphoma may be due to systemic diseases such as Rheumatoid arthritis and Sjogren syndrome (Baecklund et al., 2006).

Lymphoid tissues involvement in head and neck region in major reports were display in different articles (Baecklund et al., 2006; Kemp et al., 2008). Rabiei et al (2015) reported that Lymphoma was the second common site in Guilan, north of Iran. While Lymphoma took place in 10 most common malignancies in Iran.

In head and neck region, there are different lymphoid tissues which are apparent (Waldeyer's ring) and their involvement by inflammation or others is visible simply (Hellings et al., 1999). In addition to their accessibility, management of such tissues is easy and surgeons prefer handling for diagnosis and treatment from this site (Todd

and Michaels, 1974; Wang et al., 2014).

In oral cavity non-Hodgkin's lymphoma may occur both in soft and hard tissues as extra glandular type (Kemp et al., 2008). In soft tissues, vestibular buccal space, posterior hard palate and gingival are common sites with rubbery expansion. In osseous finding, Hodgkin disease may mimic a tooth pain which can expand cortical bones. Further stages display widening of periodontal ligaments and attachment loss. The onset of disease is almost with rapid growth with infectious odor (Kemp et al., 2008).

It was assumed that there are great differences in the distribution of lymphoma subtypes between Asian and western populations. The distribution and incidence of lymphoma is different in populations, based on gender, age and race (Anderson et al., 1998; Au et al., 2004; Au et al., 2005; Etemad-Moghadam et al., 2010) However, the possible reasons of geographic differences in the spectrum of lymphoma remain unknown. Treatment will be planned on the base of type of lymphoma, stage of the disease, the growth rate of the disease, the patient's age and symptoms of other problems (Neville, 2009).

Government planning to increase the community health level mainly depends on epidemiologic researches and studies; therefore, knowing the incidence of lymphomas, regarding the different geographical climate, age, gender and involved anatomical sites can be considered as important clues for proper diagnosis and treatment. The main objective of this research is to determine the lymphomas in head and neck area and to define the histological type

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of lymphomas.

## Materials and Methods

In this retrospective study, we carried out data analysis on patients whose information was registered in Iranian cancer registry in Guilan, north of Iran. Data from patients with head and neck lymphoma from 2004 to 2009 were studied. It should be noted that the subjects had confirmed with early cancer in the head and neck region; the subjects with incomplete information or recurrent disease were excluded from this study. Patients' demographic data (age, gender and address), location of the lesions (code C), whistological data (lesion morphology, behavior, histological grade) and the year of development of lymphomas were noted. The information gathered by cancer registry were coded by Excel software, and then were analyzed by IBM SPSS software (version 18 for windows; Chicago, Illinois, USA), and the results were presented in tables and graphs.

## Results

Of all cases of head and neck cancers in 6 years (1510 cases), 169 cases (11.2%) were reported as lymphoma (39.6% Hodgkin and 52.7% non- Hodgkin), but in 6.7% of all cases the type of lymphoma was unknown.

Non- Hodgkin's lymphoma (89/169) was more common than Hodgkin's lymphoma (67/169) in the head and neck area. Lymphoma was more common in female than men (88 vs. 81). Hodgkin's lymphoma (67/169) had male gender predilection (1.5 to 1) but non- Hodgkin's lymphoma (89/169) had female gender predilection (1.7 to 1).

The average age of male and female diagnosed with Hodgkin's lymphoma was 30.4 and 28.7 years old, respectively. The average age of male and female diagnosed with non- Hodgkin's lymphoma were 50.5 and 49.3 years old, respectively.

The onset of Hodgkin lymphoma was during adolescent and late adulthood (11-20 and 51-60 years old) while for non Hodgkin lymphoma, it was during adolescent and elderly ages (11-20 and 61-70) in female.

The onset of Hodgkin lymphoma was during adolescent and adulthood (11-20 and 21-30 years old) and

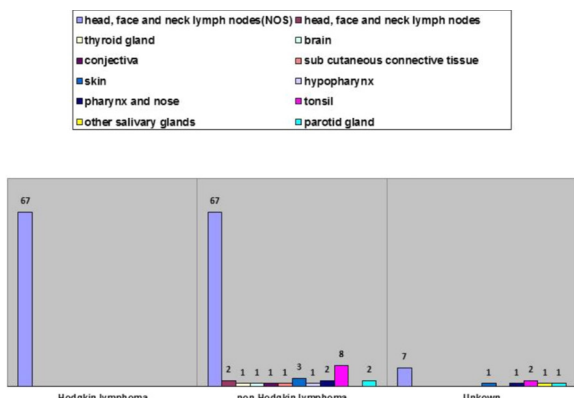


Figure 1. Frequency of Head and Neck Lymphomas in Different Anatomic Sites

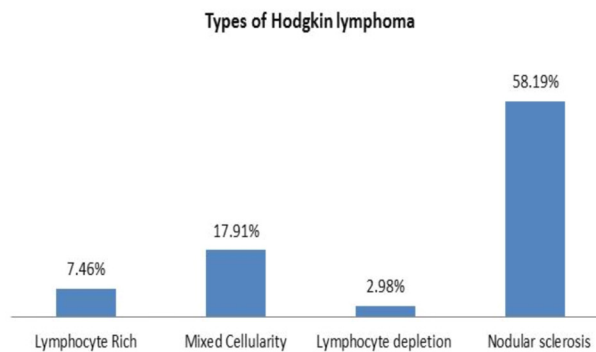


Figure 2. Frequency of Different Types of Hodgkin Lymphoma in the Head and Neck Region

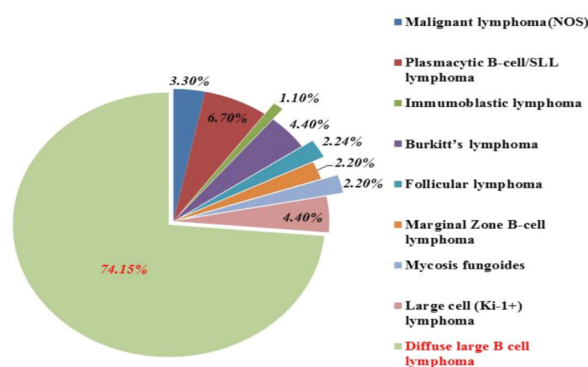


Figure 3. Frequency of Different Types of Non- Hodgkin Lymphoma in Head and Neck Region

for non Hodgkin lymphoma it was during adolescent and late adulthood (21-30 and 51-60) in male.

Trends in incidence of Lymphoma during 2004-2009 revealed that in 2009 there was the higher proportion of disease in total, especially in head and neck with face lymph nodes (ICD -77).

Head and neck with face lymph nodes (ICD -77) were common finding in advance for presentation. Tonsils (ICD -9) are the second site of involvement especially with non Hodgkin's lymphoma, while Hodgkin's lymphoma was presented only in the former site. Parotid glands (ICD -7) are also other common sites which display the disease (Figure 1).

For Hodgkin's lymphoma, classic type were reported as the most common type (86.5%) and lymphocyte predominance type had the lowest frequency ( 1.5%). In 11.9% of all cases the type of lymphoma was unknown.

Among classic Hodgkin's lymphomas, the most frequent ones were nodular sclerosis (Figure 2).

Among various histological subtypes of non- Hodgkin's lymphoma, diffuse large B-cell lymphoma was the most and follicular lymphoma was the least abundant (Figure 3).

## Discussion

In this study we found that the incidence of lymphoma is higher than other studies. In contrast to others, we found two peaks for age distribution of Hodgkin's disease (11-20 and 51-60 years old). While others reported older age as 15-35 years and above 50 years respectively. In children hematopoietic system neoplasm (leukemia and

Hodgkin's disease) comprised a significant proportion of malignant neoplasm's ( Bekmukhambetov et al., 2014). In this study non- Hodgkin's lymphoma was presented in younger people; therefore, further studies are needed to understand the cause.

In present study, there was an increasing trend in the incidence of lymphoma in 2009 compared to other years. The incidence of various types of cancers including the non-Hodgkin's lymphoma (NHL) has increased during the recent years. Diet and lifestyle factors have been reported to play an important role in the etiology of NHL (Ali et al., 2013).

Agriculture is one of the main businesses in Guilan province. Exposure to Agricultural pesticide can increase risk of non-Hodgkin's lymphoma (Cantor et al., 1992; Cocco et al., 2012; Schinasi and Leon, 2014). some studies reported exposure to the radiofrequency (RF) fields from mobile phones or their base stations can increase the risk of cancer and possibly lymphoma (Moulder et al., 1999; Repacholi, 2001; Yakymenko et al., 2014). The occurrence of this disease differs geographically which shows that different risk factors may play an important role in its etiology (Bhurgri et al., 2006). Additional researches should be done to recognize the effects of these factors on the incidence of lymphomas.

In accordance to other studies, non- Hodgkin's lymphoma was more common than Hodgkin's lymphoma (Neville, 2009). It should be noted that in some cases, Hodgkin and non-Hodgkin lymphoma occur at the same time which is called combined lymphoma (Christopher, 2000). Moreover, some types of non Hodgkin lymphoma, including follicular lymphoma and Mycosis fungoides may be changed to Hodgkin's lymphoma ; therefore, in some cases, it is not possible to disseminated Hodgkin and non-Hodgkin lymphoma.

Head and neck with face lymph nodes were common sites. Other extra nodal involvements can occur in GI, head and neck in non-Hodgkin's lymphoma (Paes et al., 2010). The most common site of involvement in the head and neck area is Waldayer's ring (Etemad-Moghadam et al., 2010; Zapater et al., 2010). In this study, tonsils, skin and parotid gland were respectively the most common sites (Figure 1). Mohtasham et al reported that salivary glands, maxillary bone and soft tissue were the most common sites (Mohtasham et al., 2011). The causal link between infectious agents and lymphoma genesis, particularly for human T-cell leukemia/lymphoma virus type 1 (HTLV-1), Epstein-Barr virus (EBV) and Helicobacter pylori infections also have been studied. In some researches the exposure to environmental agents and occupational risks have been studied, but their significance is not certain till now (Müller et al., 2005). There are different factors in these areas including the ultraviolet, lifestyle and employment of people and the spread of viruses risk such as HTLV1.

Cancer registry data reported that in 90% of subjects Histopathological grade was illusive. Though In assessment of the disease, determining histopathological grade is important especially in prognosis than determining the histological subtype; therefore, more efforts should be done to solve this problem.

The most common type of Hodgkin's disease on the basis of Histopathological pattern is nodular sclerosis. Therefore, it may be indicated as a good prognosis of the disease in Guilan society. These results are in accordance with Yoon SO 's finding (2010). diffuse large B-cell was the most common type in account of Histopathological pattern of non-Hodgkin's lymphoma. This finding is consistent with kemp et al (2008), Mohtasham et al (2011) and Yoon SO et al (2010). Ikeda and Triantafillidou (2005) (Paes et al., 2010; Triantafillidou et al., 2012) reported different finding.

By considering the rising number of the patients with lymphoma in Guilan province, especially non Hodgkin lymphoma in women, it is suggested to consider genetic factors, environmental and occupational risk factors, immune status, nutritional and life styles in future studies. Nodular sclerosis and diffuse large B-cell types were the most common types of the head and neck lymphoma, therefore early diagnosis and proper treatment can increase the survival chance of the patients.

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