

Evaluation of prognostic factors and survival in patient of Hodgkin's disease in Isfahan between 2013–2019

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Abstract

Introduction: Hodgkin's disease (HD) is a common type of lymphoma. It is considered as a cancer with a good survival rate in developed countries.

Objectives: The purpose of the current study was to investigate these patients' survival rates and prognostic factors in the Iranian community.

Patients and Methods: This study was a cross-sectional retrospective study. All confirmed cases of HD who were hospitalized from 2013 to 2019 in a tertiary cancer center were enrolled. The patient's data were collected using their medical records. A trained physician contacted the patients to acquire the missing information.

Results: There were 71 HD cases and 66 cases were eligible to be involved in the study. Around 36 patients were female and 30 others were male. The average age of patients was 31.4 years old. The 2-year survival rate of the disease was 89.3%, 5-year survival was 72.9% and disease-free survival rate was 33.3%. Age and erythrocyte sedimentation rate (ESR) were two factors that worsen the prognosis of the disease ($P < 0.05$).

Conclusion: In this study we evaluated the survival rate and factors in these patients. HD is a disease with a high survival rate in the Iranian community. The value of ESR is the most influential prognostic factor in these patients.

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Introduction

Hodgkin's disease is a neoplasm originating from lymphoid B cells. Usually, it is seen either in the third and fourth decade or after 55 years old and slightly more frequent in men (1). It is estimated that 10% of diagnosed lymphoma in adults and 30% of children lymphoma are Hodgkin's disease (2,3). Although causes of this cancer are not clear, genetic susceptibility, viral infections such as EBV and weakened immunity could increase the risk of the developing Hodgkin's disease (HD) (4). The rate of survival in these patients after treatment has been high especially in industrialized countries (2).

Based on the WHO classification, there are two types of HD. The first type which is the common one is classic HD (cHD). The characteristic of cHD is the presence of Reed-Sternberg cells in the biopsy (5, 6). The second type is nodular lymphocytic-predominant HD (NLPHD). In this type lymphocytes are dominant with a unique shape called "popcorn cell" and Reed-Sternberg cells do not exist (7). There are several subtypes of cHD. The most common subtype is nodular sclerosis classic Hodgkin's disease (NSCHD), the overall prognosis of

Key point

In a study on 66 HD patients, we found, the 5-year survival of the patients was 72.9%. Additionally, ESR showed a great correlation with decreased survival rate.

NSCHD is better than other types (5). 20 %-25% of cHD cases are mixed cellularity which is more prevalent in AIDS patients. Lymphocyte rich and lymphocyte depleted are the other rare subtypes of classical HD (8, 9).

The most common presentation of Hodgkin's lymphoma is painless enlargement of lymph node which progress to adjacent nodes. The cervical nodes are the most frequent site of involvement then, the splenic, axillary, abdominal, hilar and inguinal lymph nodes are the other frequent sites of involvement (10, 11). Chills, fever, night sweat, and unexplained weight loss (B symptoms) are a common feature in HD. The presence of B symptoms is in favor of the worst prognosis of the disease (12).

Diagnosis of HD is by histological studies of lymph node biopsy. Additionally, flow



cytometry, cell antigens, immunophenotypic markers can help to reach a more accurate diagnosis (13, 14). Approach to HD patients is based on their staging that is determined by the size and count of involved lymph nodes and extra-lymphatic dissemination (15).

During recent decades treatment of HD have been progressed. It is considered to be curable even in higher stages (16). Considering patient's condition, Hodgkin's lymphoma treatment is by chemotherapy, radiation therapy and in relapsed cases salvage chemotherapy and autologous stem cell transplant (17). In early stages chemotherapy alone has shown to be effective (18). The standard chemotherapy regimen includes adriamycin (doxorubicin), bleomycin, vinblastine, and dacarbazine (ABVD). This regimen has been used as the main treatment of newly diagnosed patients (19).

Objectives

As there are not enough studies concerning HD patients in Iranian population. This study aimed to investigate the prevalence, progression, and survival of this disease in this community.

Patients and Methods

Design and setting

This research is a descriptive-analytical cross-sectional study performed during 2013–2019 in Omid hospital which is a tertiary health care center of cancer in Isfahan, Iran. Inclusion criteria were HD patients who their diagnosis was confirmed by expert hematology-oncology specialists based on histologic examinations. The cases would be excluded from the study if they had refused the treatment, patients who were suffering from an underlying severe disease and the patients who were unwilling to share their information.

This study was a retrospective census study and all eligible patients were enrolled in it. These patients have been admitted to this hospital several times either for getting their medication such as chemotherapy or radiation or transplant or in case they were ill. The medication and their test results in each hospitalization time were archived.

We designed a checklist based on patient's medical records. This checklist consists of two parts;

- The first section was about patient's demographic and general data including name, age, gender, and the year of diagnosis.
- The second section was consisting of questions about the disease such as presence of B symptoms, erythrocyte sedimentation rate (ESR) in the time of diagnosis, pathology and the subtype of the lymphoma, chemotherapy regimen, patient survival within 2 and 5 years, and without disease survival.

After selecting eligible cases, to obtain the mentioned information, we looked into their hospitalization records. Furthermore, in order to complete the missing data, a trained physician called the patients. We also consider

the B symptoms (including night sweats, weight loss and fever).

Ethnic consideration

The current study was in accordance with the Declaration of Helsinki and its later amendments. This paper was obtained from the general physician thesis of Alireza Zafarian at the Isfahan University of Medical Sciences. All the participants were completely informed about the study aims and written informed consent was obtained from them. This study was approved by the ethics committee affiliated with the Isfahan University of Medical Sciences (IR.MUI.MED.REC.1399.156).

Statistical analysis

Data recorded on these checklists were then transferred into SPSS (statistical package for the social science v25.0, SPSS Inc. Chicago, IL). In the first section, the descriptive data such as age, gender distribution, survival, medications, subtypes, and the clinical presentation were evaluated. The chi-square and Pearson's correlation tests were applied for differences and correlations respectively.

Results

Of 71 identified cases, data of three patients were inaccessible and they did not respond to calls. Two of patients were reluctant to participate in the study. The remaining 66 patients were eligible HD cases, diagnosed by hematology-oncology specialists via clinical presentation and histology confirmation. The participants were hospitalized at least one time in Omid hospital during 2013–2019.

There were 66 patients aged between 4–86 years old with an average of 31.4 ± 16.4 years including 30 men (32.8 ± 19.5 years old) and 36 women (30.2 ± 13.4 years old).

The subtype in 62 patients was classic and in 4 patients was lymphocytic-predominant HD.

Two-year survival

Data collecting started at least 2-year after diagnosis of patients while the 2-year survival was 89.3%. Seven patients died during the first two years after diagnosis, 4 men and 3 women with an average age of 35.7 ± 14 years. Our study showed age and gender had no correlation with 2-year survival ($P > 0.05$). This rate was 86.7% in male patients and 91.7% in female, however the difference between gender was not significant ($P > 0.05$). The average ESR in them was 84.5 ± 27.6 mmh while in other patients it was 49.3 ± 31.9 mmh. The chance of survival after two years in patients with higher ESR rate was significantly lower ($P = 0.007$). One of these 7 cases was NLPHD subtype and the other six cases were cHD.

5-year survival

This index is used for 37 patients that at least 5 years have been passed from their diagnosis, since the 5-year

Table 1. The summary of factors that are effective on Hodgkin's disease patients' survival rate

	Correlation (<i>P</i> value < 0.05)			
	Age	Gender	B symptoms	ESR
2-year survival	-	-	-	+
5-year survival	+	-	-	+
Disease-free survival	-	-	-	+

"+" shows the presence of a correlation between the type of survival and the factors.

survival years was 72.9%. Ten patients died within 5 years of diagnosis including 5 men and 5 women.

The 5-year survival rate was slightly higher in female (73.4%) than male patients (72.5%). ESR rate in death patients was 84.8 ± 31.2 mmh and in survived patients was 46.5 ± 28.8 mmh. We found ESR is significantly lower in survived patients ($P = 0.001$).

Disease progression

In all these patients first-line chemotherapy was ABVD regimen. Around 29 patients required further drugs to be added to their regimen.

The disease-free survival was seen in 22 patients. However, the prevalence of B symptoms was lower and the average age was younger. There was not a significant relation between disease-free survival and these criteria ($P < 0.05$). Disease-free survival rate was correlated with ESR rate ($P = 0.016$). Two of 4 NLPHD cases were in disease-free survived group (Table 1).

Discussion

The aim of the current study was to investigate HD patients in the Iranian population, their response to treatment, survival and the possible prognostic factors. We checked all eligible patients who were hospitalized in a cancer tertiary healthcare center from 2013 to 2019. There were 66 HD cases with an average age of 31.4 years, 45.5% of them were male and 54.5% were female. The outcome shows that the 2-year survival is 89.3% and higher ESR was demonstrated to be a prognosis worsening factor. We found, 5-year survival was 72.9% and higher ESR and age were associated with bad prognosis. Disease-free survival rate was 32.8% and lower ESR was related to higher chances of this index.

HD is generally considered as a good-prognosis cancer with a high survival rate. Researches in different community and regions have reported multiple survival rate. In a Turkish study the 5-year survival was 69.3% while it was 91% in Saudi Arabia, 86.4% in Spain and 84.7% in China. This index in our study was 72.9% which is approximately similar to these studies. The variety shows that survival of HD is related to the geographic and probably socioeconomic factors. Salati et al in a review study investigated this survival rate in different continents (20-22). They believed that this difference is caused by diagnostic availability and exposure to risk factors in

countries (23).

In our study this disease was more frequent in women, however this difference was not significant. Gender distribution in HD patients was not proved in other studies and the variation of it is not specific (20). However, studies reported that the prevalence of the disease in recent decades increased more specifically in women (24). Unlike gender, researches have claimed that age is correlated with HD survival. A study in 2005 showed that age more than 45 years old is a prognostic factor in these patients. Also, in our results, 5-year survival was significantly lower in older patients (1). Therefore, it seems that occurrence of HD in older ages could be more lethal.

B symptoms are generally common finding in lymphoma patients. Researches showed that presence of them in non-Hodgkin's lymphoma e.g. diffuse B cell lymphoma would worsen the prognosis (25,26). Additionally, studies reported that HD cases without B symptoms are more likely to survive and introduced this feature as a prognostic factor (16,27). In a Turkish study on 391 HD patients the outcome demonstrated that presence of B symptoms would decrease the survival (28). However, in our study B symptoms are less frequent in survived patients; while, the impact of the presence of them was not statistically significant ($P > 0.05$). This difference may be because of the lower number of enrolled cases of our study or ethnic difference. Therefore, further studies with higher number of participants are recommended.

ESR has shown to be the most important prognostic factor in our study. Patients who had lower ESR were more likely to survive over 2 and 5 years and completely cured. In 1991 Henry-Amar et al reported that elevated ESR in HD patients can be a relapse predictor and is related with poor prognosis (29). In a study by Tubiana et al, the results showed that among the HD prognostic factors, like ESR has the highest relation with disease-free survival. However, unlike our study, it was not correlated with death (30). Generally, these results are in favor of our findings. High ESR is a major prognostic factor in Iranian HD patients as well.

Conclusion

In conclusion the current study describes the demographic and epidemiologic features of HD cases in Iran. The 5-year survival of Hodgkin's lymphoma in the Iranian community was 72.9%. The prognosis of the disease is mostly correlated with high ESR and increased age.

Study limitations

A limitation of the study was the number of participants, accessing to information of more patients could result in more comprehensive perspective about the disease in the population. Also, many patients didn't know the subtype of their disease and it was not specified in their medical records.

Conflicts of interest

The authors indicate no potential conflicts of interest. The authors are responsible for the Writing and content of the article.

Authors' contribution

AS: study design, patient diagnosis and selection, supervision and revision, AZ: data collection, analysis, writing and editing. Both authors read and signed the final manuscript.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

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