

# Stage I seminoma recurrences in patients admitted to radiotherapy clinic of Shohada hospital between 1991 and 2002

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## Abstract

**Introduction:** Currently, cancers are among the important and main problems of health system in Iran and around the world. In young men under 20 to 35 years of age, malignant masses of testis are the most common tumours. The main pathologic feature of these masses is germ cell tumour and about half of them are seminoma. Since seminoma is very prevalent in the fourth decade, being affected with this tumour leads to losing many years of healthy life.

**Method:** In a cross sectional study, investigating 139 records of patients with testis tumour revealed 61 patients with stage-1 seminoma. Thirty three patients underwent para-aortic and unilateral pelvic irradiation (54%) while 28 patients only underwent para-aortic irradiation (46%). The administered radiotherapy dosage varied between 25-40 Gy.

**Results:** Mean age of the patients was 37.8 of whom the youngest was 15 and the oldest was 64 years of age. Only one recurrent patient was seen in this cohort who was in para-aortic group. There was no significant difference in recurrence rate between the two radiotherapy methods. ( $p=0.7$ ).

**Conclusion:** Considering fewer complications of para-aortic irradiation and the insignificant difference in the recurrence rate between the two methods of radiotherapy, para-aortic method could be more appropriate and acceptable in the treatment of testicular cancer.

**Keywords:** seminoma, germ cells, recurrence, radiotherapy

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## Introduction

Cancers, nowadays, are among the important and main problems of health system in Iran and around the world. They are the third cause of death and the second prevalent chronic condition in Iran. New life style, smoking, population growth rate and older age are among the causes of higher cancer prevalence rate. (1)

Because the prevalence rate of cancer is high and for its major impacts due to their huge physical, mental, social and financial burden, it seems that early detection and treatment of malignancies, not only increases life expectancy but can also play an important role in improving public health and then macro-economics of the communities. Testicular cancers amid the wide range of malignancies embrace different physical and clinical features which differ in frequency according to geographical distribution. The highest prevalence of testicular cancer could be found in northern Europe in Nordic

region. People of Asian or African descent have a low incidence. Differences in incidence persist after migration, and due to the best evidence available, the interaction between genetics and environment is important. (Horwich A, Lancet 2006) Overall, this is among the most prevalent malignancies between 20 and 35 years of age. (2)

More than 54% of patients with testicular cancer (1) and up to 99% of stage-1 testicular seminomas (Horwich A, Lancet 2006) are considered curable with effective and comprehensive treatments. Regarding the fact that germ cell testicular cancers are most probably curable and also the majority of testicular malignancies are primary tumours –mostly germ cell tumours–, it is vitally important how to manage all stages of the tumour. Different studies indicate that standard radiotherapy may increase the possibility of definite cure of stage-1 seminoma to 98% and expected recurrence is about 2%. (3) This study was designed to investigate the recurrence

rate due to treatment failure and to compare this rate with previous studies.

**Method**

In a descriptive and analytic cross sectional study, medical records of patients with an established stage-1 seminoma who referred to radiotherapy clinic of Shohada hospital between 1991 and 2002 were investigated. Inclusion criteria were pathologic diagnosis in addition to  $\alpha$ FP,  $\beta$ HCG, abdominal and pelvic CT scan, chest x-ray, and lack of retro-peritoneal lymph node involvement nor the extension of tumour above diaphragm. Non-random sampling was available. All data including the date of starting treatment, radiation dosage, and follow-ups until the last referral were recorded in a check list. SPSS version 11 was used for data analysis. Frequency was used for description and cross-tabulation (chi square) for analytic tests; all with a significant level of 0.05.

**Results**

After reviewing medical records between 1992 and 2003, 139 cases of Germ Cell Testicular tumour (GCT) were detected out of which 71 were seminoma (51%) and 68 were non-seminoma (49%). Out of 71 seminoma patients, 61 cases were in stage-1 (86%) who were included in the study. Eight patients had retro-peritoneal lymph node involvement (11%) and two cases (3%) had evidence of supradiaphragmatic involvement. In 37 patients out of sixty-one cases with stage-1 seminoma, the origin was in the right testis (60%) while it was in the left testicle in the remainder (n=24, 40%). The youngest patient was 15 and the oldest was 64 years old, with a mean of 37.8. Age stratification showed that most cases (39.3%) were in the 25-34 year old group. (Table-1)

Table 1: Age frequency of patients

Age group	Number	Percent
15-24	2	3.2
25-34	24	39.3
35-44	19	31.3
45-54	12	19.7
55-64	4	6.5
Total	61	100

Thirty four patients (out of 61) were followed up for 5 years and more (56%) while 12 patients were followed for three years (20%) and 15 patients were followed for at least two years (24%). Thirty three patients underwent para-aortic and hemi-

pelvic irradiation (54%) while the remainder (46%) only underwent para-aortic radiotherapy. The administered radiotherapy dosage varied between 25-40 Gy.

**Discussion and conclusion**

As described above, review of medical records revealed that 139 cases had GCT tumour of whom 71 were seminoma (51%) and 68 were non-seminoma (49%). Out of 71 seminoma patients, 61 cases were in stage-1 (86%) who were included in the study. Eight patients had retro-peritoneal lymph node involvement (11%) and two cases (3%) had evidence of supradiaphragmatic involvement, which were consistent with other studies. This indicates that the majority of seminoma tumours are in stage one (84%) at the time of diagnosis but 3-5% show mediastinal or supra-clavicular lymph node involvement. (3)

In this study, in 37 patients out of sixty-one cases with stage-1 seminoma, the origin was in the right testis (60%) while it was in the left testis in the remainder (n=24, 40%). In a study by Bauduceau and colleagues, the same proportion was found. (4)

The mean age in our study was 37.8 years old and the majority of patients (39.3%) were in the second age group (25-34 years). Other studies have reported the same mean age; for instance, in the study by Bauduceau et al, the reported mean age was 34 and in a study by Poraro et al which included 56 patients between 1977 and 2000, the mean age of patients was 40 years. (5)

In the present study, only one recurrent case (1.6%) was detected among patients who underwent para-aortic irradiation and no significant difference was seen between the two groups for recurrence rate according to irradiation type (p= 0.7).

Niazi and his colleagues in a relatively large cohort of 675 patients showed that para-aortic radiotherapy after surgery is efficient enough to prevent recurrence. Regarding the tumour recurrence of 1.4%, they concluded that this method of treatment makes the patients free of tumour and recurrence for at least 5 years. (6) Classen J et al found the same results (7).

Fossa et al showed that there are no differences in survival and recurrence rates if the radiation field is limited to the para-aortic lymph nodes (8) which is in line with a study by Bruns F et al (9).

As described before, malignant masses of testis are the most common tumours in young men under 20 to 35 years of age. The main pathologic feature of these masses is germ cell tumour and about half of them are seminoma. Since seminoma is very

prevalent in the fourth decade, being affected with this tumour leads to losing many years of healthy life. Therefore early detection and perfect treatment of the patients are extremely important.

Our results are compatible with other studies around the world in spite of the fact that in this study, follow-up had some limitations due to the incomplete medical records. There was no significant difference, however, between the two irradiation methods and the recurrence rate (1.6%) is acceptable. Due to the fewer short-term and long-term complications of para-aortic irradiation, this method is recommended although more prospective studies with larger samples are needed to define the effects of this method on cure and recurrence rate more precisely.

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