

## RESEARCH COMMUNICATION

# Epidemiology of Kaposi's Sarcoma in Iran: 1984-2006

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### Abstract

Kaposi's sarcoma (KS) is the rarest cancer among Iranian. This study was conducted to define the epidemiology of KS in Iran. The data of National Cancer Registry (NCR) reports from 2003-2006, Tehran Population Based Cancer Registry (TCR) from 1998 to 2001, and a literature review of the published articles until Aug. 2007 was conducted, the search strategy included all papers containing "Kaposi", were combined with the word "Iran" in their titles or abstracts. In males, the annual age-standardized incidence rate was from 0.10 to 0.17 per 100,000 and in females was from 0.06-0.08 per 100,000. Peak incidence was at ages 50-79. It is more common in male than female. The Male/Female ratio has different reports from 3.2/1 to 1.8/1. Although, there were no published reports about HHV-8 or HIV/AIDS associated with KS in Iran, the elderly might be a common associated factor for KS. The prognosis of KS after renal transplantation is good; simple reduction or cessation of immunosuppression may result in partial or complete remission of the disease.

**Key Words:** Kaposi's sarcoma - epidemiology - Iran

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### Introduction

Kaposi's sarcoma (KS) is a cancer-like disease. Until 1980s, it originally was known as a disease affecting elderly men of Eastern European or Mediterranean background. KS also occurs in African men and people with a weakened immune system. Now the most common cause of KS is HIV infection (Antman and Chang, 2000). KS is the rarest cancer among Iranian. To describe the incidence rates and epidemiology of KS, this study was conducted in Iran.

### Materials and Methods

Based on data from the National Cancer Registry (NCR), and Tehran Cancer Registry (TCR) the epidemiology of KS in Iran during the period 1998-2006 was described. NCR has been developed by pathologic records only and TCR was population based cancer registry for Tehran (the capital of Iran) city. In this retrospective study, all records of NCR from 2003 to 2006 (existing records) and TCR from 1998 to 2002 (available data) were assessed. The reports of National Death Survey (NDS) were evaluated for deaths which might be registered with cause of KS. A literature review of the published articles until Aug. 2007 was conducted to assess the epidemiological aspects of KS in Iran. The search strategy included all papers containing "Kaposi", were combined with the word "Iran" in their titles or abstracts.

### Results

National Cancer Registry was registered 50, 44, and 61 cases of KS in 2004 (National Report of Cancer registry, 2003), 2005 (Mousavi Seyed Mohsen et al., 2006) and 2006 (Mousavi Seyed Mohsen Ramazani et al., 2007) respectively, and TCR (Mohagheghi MA et al., 1998-2002) could registered 101 new cases from 1998-2002. In males, the annual age-standardized incidence rate (World standard population) was from 0.10 to 0.17 per 100,000 and in females was from 0.06-0.08 per 100,000. Peak incidence was at ages 50-79.

According to National Death Survey reports; there were not registered deaths due to KS in 2001 (Naghavi Mohsen, 2003), 2003 (Naghavi Mohsen, 2005) and 2005 (Naghavi Mohsen, 2007). Based on reviewing the literatures, there were 5 citations in MEDLINE, which their full text articles were reviewed. The summary of this review is as following: A study on 2050 kidney graft recipients (KGRs) who received organs between 1984 and 1999 for assessing the involvement of KS; 18 patients developed KS (0.87%), The onset of KS was on average 26±25.8 months after transplantation (range 5 to 125 months); 13 were men and five were women (male/female ratio: 2.6:1). Cutaneous lesions were detected in all patients (Lessan et al., 2001). Another study on 2000 cases who received kidney allograft from January 1984 to December 2002, defined 14 (nine men and five women) cases of KS (male/female ratio: 1.8:1) (Firoozan et al., 2005). A study

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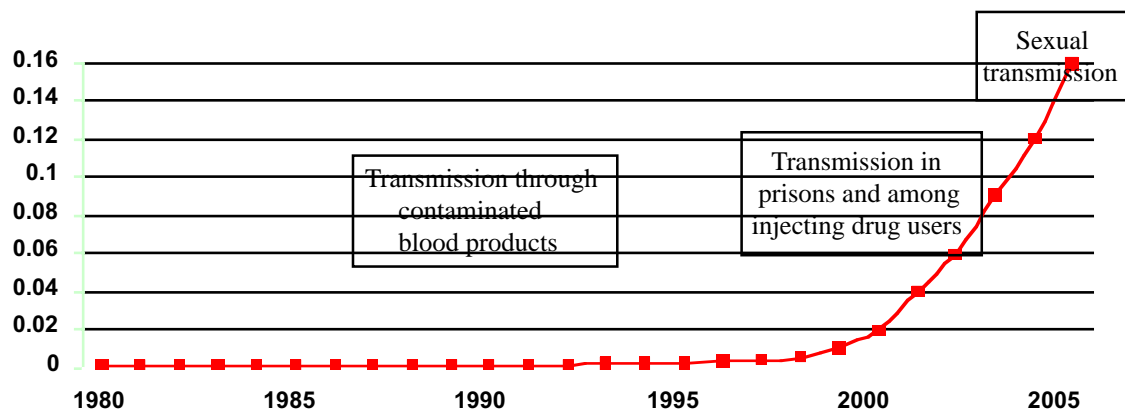
**Table 1. Age Adjusted Incidence Rate of KS per 100,000 Population according to TCR and NCR**

| Age Group | TCR 1998-2002 |      | NCR 2004 |      | NCR 2005 |      | NCR 2006 |      |
|-----------|---------------|------|----------|------|----------|------|----------|------|
|           | F             | M    | F        | M    | F        | M    | F        | M    |
| 0-4       | 0.00          | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 |
| 5-9       | 0.00          | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 |
| 10-14     | 0.00          | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 |
| 15-19     | 0.00          | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 |
| 20-24     | 0.00          | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 | 0.00     | 0.00 |
| 25-29     | 0.00          | 0.15 | 0.04     | 0.04 | 0.01     | 0.01 | 0.00     | 0.02 |
| 30-34     | 0.11          | 0.00 | 0.00     | 0.04 | 0.00     | 0.01 | 0.01     | 0.00 |
| 35-39     | 0.12          | 0.00 | 0.00     | 0.10 | 0.00     | 0.02 | 0.01     | 0.00 |
| 40-44     | 0.00          | 0.00 | 0.06     | 0.06 | 0.00     | 0.00 | 0.00     | 0.00 |
| 45-49     | 0.19          | 0.00 | 0.15     | 0.13 | 0.00     | 0.00 | 0.02     | 0.02 |
| 50-54     | 0.28          | 0.00 | 0.09     | 0.22 | 0.02     | 0.03 | 0.02     | 0.08 |
| 55-59     | 0.35          | 0.00 | 0.26     | 0.37 | 0.03     | 0.09 | 0.06     | 0.20 |
| 60-64     | 0.39          | 0.47 | 0.16     | 0.21 | 0.08     | 0.11 | 0.08     | 0.10 |
| 65-69     | 0.00          | 0.81 | 0.00     | 0.25 | 0.09     | 0.21 | 0.13     | 0.23 |
| 70-74     | 0.76          | 1.57 | 0.41     | 0.72 | 0.10     | 0.13 | 0.05     | 0.21 |
| 75-79     | 2.09          | 2.17 | 1.04     | 1.98 | 0.26     | 0.30 | 0.16     | 0.35 |
| 80-84     | 0.00          | 0.00 | 0.95     | 2.19 | 0.23     | 0.18 | 0.00     | 0.86 |
| 85+       | 0.00          | 4.29 | 2.13     | 1.96 | 0.26     | 0.24 | 0.00     | 0.93 |
| Total     | 0.08          | 0.13 | 0.07     | 0.12 | 0.06     | 0.10 | 0.06     | 0.17 |

on 1750 renal transplant recipients from 1984 to 1999 in two centers in Tehran was reported 28 (1.6%) cases of different cancers; The most common type was Kaposi's sarcoma (n= 13) (Einollahi et al., 2001) . Retrospectively review on 2117 patients who underwent living donor kidney transplantation from July 1984 to July 2004 showed 38 patients (1.8%) developed cancer during 19 years follow up; 14of them were KS, and 78% cases were under 40 years (Nafar et al., 2005) .Between April 1986 and January 1999, 1216 renal transplantation were carried out at Transplantation Unit, Hashemi Nejad Kidney Hospital in Tehran. During a mean follow-up period of 56 ± 37 months (range, 3 to 153 months), 21 malignancies were diagnosed, KS (5 Male) ( Ghods and Ossareh, 2000). There was no published article reflecting the HIV/AIDS-related KS in Iran.

**Discussion**

This study could not explain the trend of KS, because



**Figure 1. The Trend of HIV/AIDS Annual Prevalence Rate per 1000 Population in Iran from 1980 to 2005**

the data were not sufficient; however it approved the KS is a rare cancer, and demonstrated the elderly might be a common associated factor for KS in Iran. It is more common in male than female. The Male/Female ratio had different reports from 3.2/1 to 1.8/1. The prognosis of KS after renal transplantation was reported good; simple reduction or cessation of immunosuppression may result in partial or complete remission of the disease and seemed to be relatively safe for kidney graft function.

Compare to the other countries, the incidence of KS has been reported to be high in Jewish populations, mostly born in Eastern Europe. The overall age-standardized rate of KS was 1.7 per 100.000 in men and 0.06 per 100.000 in women. In this report, the lowest incidence was experienced by immigrants from Iran ( Iscovich et al., 1998). Although the incidence of KS increased slightly from 1989-1991 to 1995-1997, KS remains a very rare malignancy in Thailand compared with other countries in which the prevalence of HIV/AIDS is much lower. According to this report, Only 27 cases of KS were recorded in the 5 registries over the 13-year period examined. Male/Female ratio was 4.4/1, and the average age-standardized incidence rate for the period was 0.02 per 100,000. Peak incidence was at ages 15–49 ( Sriplung and Parkin, 2004). There are two difference between epidemiology of KS in Thailand and Iran, the incidence rate of KS in Iran is higher and the peak age group is higher. These differences may be due to the population age group difference, or the prevalence of HHV-8. The incidence rate for KS were 1.0 per 100.000 in men and 0.4per 100,000 in women between 1985 to 1998 in Italy (Dal Maso et al., 2005), The first examination of classical KS incidence in southern Sardinia (Italy) in 1998-2002 found the highest rate recorded in the island of 2.49 per 100,000 per year (Atzori et al., 2004). Based on data from the Scottish Cancer Registry during the period 1976-96; in males, the annual age-standardized incidence rate increased from less than 0.09 per 100,000 before 1986 to 0.44 in 1991 and then decreased to around 0.17. Peak incidence is now at ages 30-39 compared with ages 80+ during the period 1976-82. These changes are largely consistent with the pattern of HIV infection in Scotland. However, in both sexes, relative to other neoplasms, and in international terms, KS remains rare in Scotland (Brewster et al., 1999).

AIDS-related (or epidemic) KS arises in people who are infected with HIV. The first case of HIV/AIDS was diagnosed in a hemophiliac patient in Iran in 1987 and after that, the epidemic curve of HIV/AIDS increased slowly until the end of 2000 which its increasing was logarithmic as shown in figure 1 (The last HIV/AIDS report of I.R, 2006). HIV-1 subtype A is likely to be the dominant viral subtype circulating in the country. The analysis of genetic distances showed subtype B viruses in Iran to be twice as heterogeneous as the subtype A viruses and concluded two parallel outbreaks in distinct high-risk populations and may offer clues to the origin and spread of infection in Iran (Sarrami-Forooshani et al., 2006). Sharing injection instruments was a common and complex behavior among Iranian IDU (Vazirian et al., 2005; Razzaghi et al., 2006; Day et al., 2006). There were no published reports about HIV/AIDS associated with KS in Iran; and this study could not determine any relations between HIV/AIDS curve with KS. However, KS associated humans herpes virus 8 (HHV-8) is one of the few viruses proven to be associated with tumorigenesis (Mohanna et al., 2005; Cohen et al., 2005; Plancoulaine and Gessain, 2005); there were no published reports about HHV-8 associated with KS in Iran. The author recommended assessing these associations among Iranian patients with KS. It was estimated the percent of elderly will be increased during two decade, there for the incidence of KS may be increased. The incidence rate of Chronic Kidney Disease and renal transplantations is being increased during two decade in Iran (Nafar et al., 2001), with the use of potent immunosuppressive agents; malignancies have arisen as an important factor of morbidity and mortality in transplant recipients. Therefore; precaution for using immunosuppressive drugs should be prescribed.

It was recommended to define the quality of life of KS in Iran. Mass education and increasing the knowledge, early detection, implementing the effective treatment protocol, and palliative cares of elderly is recommended as a health priority in Iran (Mousavi, 2007). KS is a disease that affects people with AIDS who are not taking anti-HIV drugs. It is recommended Center for Disease Control and Prevention of Ministry of Health to expand the Anti Retroviral Treatment.

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