RESEARCH ARTICLE

Age at Diagnosis in Bladder Cancer: Does Opium Addiction Play a Role?

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Abstract

Background: Bladder cancer is a major health problem, especially among men. Opium addiction can be an important risk factor. One important question is whether it can affect the age of onset of bladder cancer .We performed this study to evaluate this question. Materials and Methods: In a cross-section study, records of patients diagnosed with bladder carcinoma in Shahid Labbafinejad Medical Center, within 1999-2008 were included. Data were extracted from records regarding age at onset, gender, smoking status, and opioid addiction and analyzed with SPSS 13. Results: Within 10 years, 920 cases were diagnosed with bladder cancer of which 97 percent were transitional cell carcinoma. In 698 cases, opium addiction status was recorded in 21.3% (n=149). Age at diagnosis was 59.7±11.51 (median: 60) among opioid addicts which was significantly lower than non-addicts (63.1±13.65, Median: 65) (P<0.001). Conclusions: Opium addiction can decrease the age of onset of bladder cancer.

Keywords: Bladder cancer - risk factor - age of onset - opium addiction - smoking

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Introduction

Bladder cancer (BC) is a major health problem, especially among men (Ribal et al., 2011). It is estimated that in the year 2008, 150,000 cases lost their lives due to bladder cancer and 386,300 new cases were diagnosed throughout the world (Jemal et al., 2011). According to a critical systematic review, bladder is the most costly malignancy due to the need for lifelong routine monitoring and treatment from diagnosis to death (Botteman et al., 2003; Grasso et al., 2008).

In Iran, bladder cancer is one of the most common malignancy sites among men, ranking as the fifth with age-specific incidence rate of about 11.2 per 100,000 males (Sadjadi et al., 2002; GLOBOCAN, 2008; Kolahdoozan et al., 2010).

Previous research has shown that opium addiction can be an important risk factor to bladder cancer with odds ratios as high as 5 (Hosseini et al., 2010, Shakhssalim et al., 2010). In addition, it seems that the incidence of bladder cancer in smokers, who are simultaneously opium abusers, is higher than in other (non-opium abuser) smokers (Hosseini et al., 2004, Shakhssalim et al., 2010).

Although the role of tobacco and opium exposure in pathogenesis of bladder cancer has been studied rather extensively, no previous research has examined the hypothesis if smoking and opium abuse lead to a younger age at diagnosis of bladder cancer. The purpose of this research was to determine the age of bladder cancer patients in Iran and if smoking and opium addiction have associations with the age of onset.

Materials and Methods

In this cross-section study, records of patients diagnosed with bladder carcinoma in Shahid Labbafinejad Medical Center (one of the major referral urology and uro-oncology centers in Iran), within 1999-2008 were included. Data were extracted from records regarding age at onset, gender, smoking status, and opioid addiction and analyzed with SPSS 13. Alpha=0.05 was considered as the level of statistical significance.

Results

Within 10 years, 920 cases were diagnosed with bladder cancer of which 97 percent were transitional cell carcinoma. About 83.5 percent were male and mean age at diagnosis was 62.14±13.7 (median 64 for both genders). Among 692 cases with known smoking history, 334 (48.3%) had a positive history of smoking. The age at diagnosis among smokers (62.16±11, 24; median: 64) was lower; but, not significantly different from the age of non-smokers (62.59±14.95; median: 65) (p=0.13). Among

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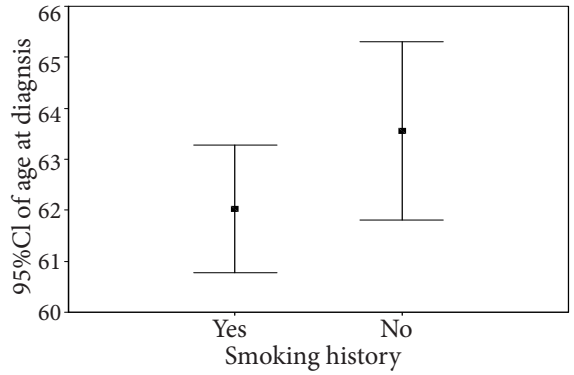

Figure 1. Age at Diagnosis Among Male Smokers and Non-Smokers

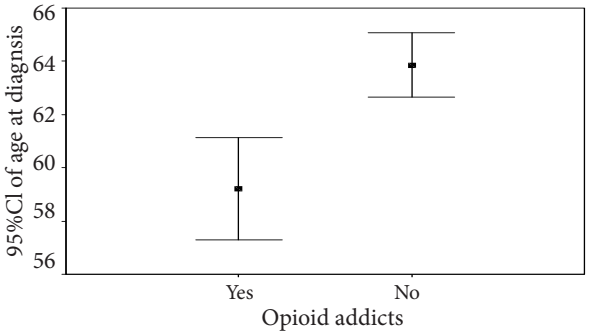

Figure 2. Age at Diagnosis Among Male Opioid Addicts and Non-Addicts

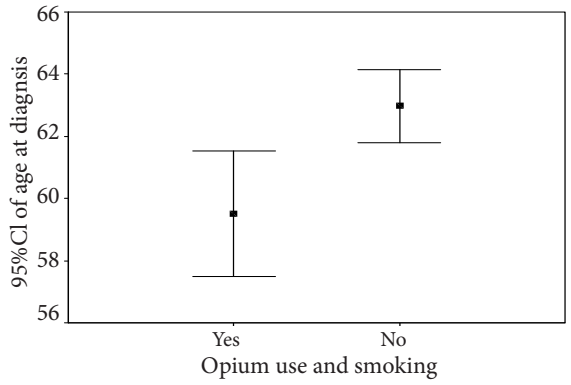

Figure 3. Age at Diagnosis Among Male Smokers Who Abused Opium and Other Male Patients

men, this difference proved to be significant (p=0.028) (Figure 1).

In 698 cases, opioid addiction status was recorded of whom 21.3% were positive (n=149). Age at diagnosis was 59.67±11.51 (median: 60) among opioid addicts which was significantly lower than non-addicts (63.14±13.65, Median: 65) (p<0.001). Among male patients, this difference was significant, as well (Figure 2). In addition, 126 cases were dependent to both tobacco and opium. These cases were significantly younger at diagnosis (59.78±11.5, Median: 60) in comparison with other cases (62.67±13.9, Median: 65) (p=0.029). Limiting this analysis to men, further highlighted the difference (p=0.009) (Figure 3). As the last analysis, we divided male cases into four groups: those without smoking or opium history (n=235), men positive on both histories (n=124), smokers who didn't abuse opium (n=201) and opium addicts that did not smoke (n=21). Analysis of variance showed an overall significant association between age at diagnosis among these groups (p=0.001). Moreover, significant differences were observed between the first and second categories and also between second and third groups. The lowest age at onset was among non-smoking opium addicts (57.2±13.6); nevertheless due to low sample size of this category (n=21), further analyses were not conclusive.

Discussion

In this research, the age at diagnosis of bladder cancer was compared in tobacco smokers and/or opium addicts versus other cases. Overall, mean age in our study was about 62 (median 64 years) which was similar to a previous report on cases admitted to another uro-oncology center in Tehran, Iran in a 30-year period (Yavari et al., 2009). This is lower than the median year at diagnosis (73 years) reported in texts (Messing, 2008) and those provided by surveillance end results the US (SEER Fact Sheets, 2005; 2009). This lower age at diagnosis might have similar explanations as what is encountered regarding breast cancer in Iran: the age of onset of breast cancer in Iran is about one decade earlier than in western countries (Harirchi et al., 2004). The reasons for this earlier year at onset need to be further investigated through environmental investigations.

Male to female ratio in our series -similar to other international and national reports-was about 5.1 (Scelo et al., 2007; Yavari et al., 2009). About 48.3% of our cases had a positive history of smoking and 21.3% abused opium in a regular basis. In another study from the north of Iran, nearly 20 percent of bladder cancer patients had a positive history of opium abuse (Ahmadi et al., 2012). As Iran has one of the highest prevalence rates for opium use (World Drug Report, 2012), many efforts have been in action to limit opium smuggling through eastern borders (Karbakhsh et al., 2007). Since 1979, opium production is forbidden in Iran and the available opium is largely illegally trafficked from neighboring Afghanistan (World Drug Report, 2012) and opium is still the most prevalent form of opioid abused in Iran (Ahmadi et al., 2003).

Previous research has shown that opium abuse is associated with a statistically significant increased risk of BC (OR=4.60, 95% confidence interval=3.53-6.28) (Hosseini et al., 2010). Other investigations have found even more strong associations (OR=7.99, OR=7.99 [95%], CI 5.3 to 12.5) (Ketabchi et al., 2005). The high incidence of some other malignancies in Iran, such as esophageal cancer in north-easterner provinces (Nasrollahzadeh et al., 2008) and laryngeal cancer (Mousavi et al., 2003) has also been linked to opium consumption. Different mechanisms have been proposed for this carcinogenicity and mutagenicity such as pyrolysis of opium (Malaveille et al., 1982).

No previous research had shown the relationship between opium abuse and age of onset of bladder cancer. The only related research might be the case-control study by Damghani (2004) on laryngeal cancer in Kerman-a province with one of the highest opium addiction rates in Iran. He showed that abusers where about one decade younger than others at diagnosis (55.1 vs. 65.6)

(Damghani, 2004). In our study, we also observed a younger onset age of bladder cancer than others. In our research, tobacco smoking also showed such a pattern in males. The reasons for such a difference cannot be speculated from our study and need to be replicated in further research.

Our study had some limitations. It was based on available data records; thus, history of smoking and opium addition was solely based on patients' reports documented in their records. In addition, details on smoking pack year, history of passive smoking, route of opium abuse (ingestion or smoking) and daily opium dose abused were not available.

The findings are important as the first evidence on younger age at diagnosis of bladder cancer among opium users. Public education regarding the long-term side effects of opium abuse is necessary. As some authors have previously suggested, screening for bladder cancer among tobacco and opium abusers might be an effective strategy (Nourbakhsh et al., 2006) and need to be started at younger ages.

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