Study on bladder cancer related to toxic habits in Cuba

Estudio sobre el cáncer de vejiga relacionado con los hábitos tóxicos en Cuba

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Abstract

A retrospective descriptive cross-sectional observational study was conducted at the Urology Service of the Celestino Hernández Hospital, in the Municipality of Santa Clara, Villa Clara Province, in the period from 2014-2019 with the aim of characterizing epidemiological, clinical, diagnostic and therapeutic patients with bladder tumors who have been active smokers for most of their lives. The population was conformed by 147 patients with Transitional Papillary Bladder Carcinoma. Among the most frequent variables was found the toxic habits of these patients through the means used to diagnose the disease. In the applied surgical treatment, postoperative tumor recurrence, postoperative complications and localization of metastases at the time of diagnosis made the continuity of tobacco consumption impossible. Smoking was more prevalent in 83%. Pulmonary metastases were the most frequent with 9.52% of the population.

Keywords: Bladder tumors, toxic habits, smoking, tobacco

Resumen

Se realizó un estudio observacional transversal descriptivo retrospectivo en el Servicio de Urología del Hospital Celestino Hernández, del Municipio de Santa Clara, Provincia de Villa Clara, en el período 2014-2019, con el objetivo de caracterizar a los pacientes epidemiológicos, clínicos, diagnósticos y terapéuticos con tumores de vejiga que han sido fumadores activos durante la mayor parte de su vida. La población estuvo conformada por 147 pacientes con Carcinoma de Vejiga Papilar de Transición. Entre las variables más frecuentes se encontraron los hábitos tóxicos de estos pacientes a través de los medios utilizados para el diagnóstico de la enfermedad. En el tratamiento quirúrgico aplicado, la recurrencia del tumor en el postoperatorio, las complicaciones postoperatorias y la localización de metástasis en el momento del diagnóstico imposibilitaron la continuidad del consumo de tabaco. El tabaquismo era más frecuente en el 83%. Las metástasis pulmonares eran las más frecuentes con el 9,52% de la población.

Palabras clave: Tumores de vejiga, hábitos tóxicos, fumar, tabaco

Introduction

Smoking is a public health problem of international importance, is the single most preventable cause of death in the world and kills up to half of those who practice it. If consumption trends remain unchanged, tobacco will kill more than eight million people each year by 2030[1]. In many parts of the world, there is a trend for both women and men to start smoking tobacco at younger and younger ages, implying an urgent need to establish preventive actions targeting vulnerable populations.

Cancer is a health problem for humanity due to the high incidence and mortality rates that occur worldwide, and the family, work and economic problems that it generates[2]. The main known cause of bladder cancer is tobacco, which is attributed to about 50% of all diagnosed cases.

Tobacco does not only affect our airway through smoke. More than 60 carcinogenic products contained in cigarettes are absorbed and eliminated by the urine, greatly affecting the cells of the wall of our urinary tract. Bladder cancer is a pathology whose incidence has been increasing in recent decades. It is the second most frequent neoplasm among genitourinary tumours after prostate cancer[3].

More than 60 carcinogenic products contained in cigarettes are absorbed and eliminated by the urine, greatly affecting the cells of the wall of our urinary tract[4]. Bladder cancer is the fourth most common cancer in men, but is less common in women[5]. By 2020, the American Cancer Society estimates for this cancer in the United States are

- About 81,400 new cases of bladder cancer, of which 62,100 will be men and 19,300 will be women

- About 17,980 people will die from bladder cancer (about 13,050 men and 4,930 women)[6].

In 2015, more than 21,000 cases of bladder cancer were diagnosed in Spain (17,439 in men and 3,564 in women), which places this tumour in fifth place in terms of incidence in Spain, according to data published by the Spanish Society of Medical Oncology (SEOM)[4]. Bladder tumours account for 10% of tumours in men. They predominantly affect men (4:1 ratio with women)[5,6]. Bladder cancer is the fifth most common cancer among men in developed countries, with approximately 357,000 new cases per year worldwide (274,000 men and 83,000 women). It represents 3.3% of all tumours (4.7% in men and 1.6% in women)[7].

The sex ratio is 3.3 men to every woman in the world, 3.8 in Europe, and 7 in Spain 7, where some 12,200 cases are diagnosed annually, representing 11% of male tumours (10,700 cases) and 2.4% of female tumours (1,500 cases). In women, both incidence and mortality are low and relatively stable. The incidence in Spain is among the highest in the world, being the fourth most frequent tumor in men, after lung, prostate and colorectal tumors (adjusted global rate in 2002: 33 new cases/100,000 inhabitants/year). Only in Egypt are more cases recorded, with a tendency to increase slowly[7].

Prostate cancer in Cuba, as in many countries in the world, is one of the main health problems. In 2002 this disease represented 16.9% of all malignant tumours in men, except for skin cancer, surpassed only by lung cancer and with a rate adjusted to the world population of 25.8 per 100 000 inhabitants. The absolute number of new cases per year has increased from 1 711 in 1992 to 2 087 in 2002; with respect to mortality, the number increased from 1560 in 1993 to 2 167 in 2004. In Villa Clara, cancer is the leading cause of death; prostate cancer is the second most prevalent site (crude rate: 41.9%) preceded by lung cancer[8].

Almost all of them are associated with the habit of smoking as a major risk factor, since this addiction has experienced a notable rise in Cuba, currently the country with the highest number of smokers in the region and ranked 38th globally[8]. Between 2012 and 2017, 266 new cases have been diagnosed, 80% of which are male and 20% female. From 2014 onwards, 33 cases of superficial bladder tumours and 51 invasive cases have been diagnosed8. 80% of the clinical trials carried out are aimed at cancer therapy, as this is the second cause of death in the territory. Almost all are associated with smoking as the most important risk factor, since this addiction has experienced a notable rise in Cuba, currently the country with the highest number of smokers in the region and ranked 38th globally[9].

Bladder cancer is the sixth leading cause of death in Cuban men and the tenth in women[10]. It is considered a "silent disease", because while the cells are transformed and increase, up to 10 years can pass without symptoms. The true cause of prostatic carcinoma is unknown, but it is clear that its growth is influenced by sex hormones. It is common for the symptoms of prostatic carcinoma to appear in the late phase of its development and are usually due to local obstructive infiltration, distant metastases and chronic stasis-induced urinary infection[11].

These high numbers of patients show that mortality from this disease is the leading cause of death between the ages of 50 and 64 and the second most common among the age groups 5-49 and 65 and older, and has the greatest impact on life expectancy at birth for Cubans. Each year, more than 27,000 new cases are diagnosed and more than 18,000 deaths are recorded. From 1990 to 2005, cancer mortality in Cuba has increased by 2% per year. Death itself cannot be avoided, however, it can be postponed. The importance of this fact for health has motivated the development of measures since long ago. The rise in mortality due to malignant tumours could be a more serious problem in the future in Cuba, given the ageing process of the Cuban population. This ageing process will imply a greater demand for human, material and financial resources for the treatment of this disease, as well as for the implementation of preventive actions[12].

In the urology service, this pathology is highly frequent in recent years. There are statistics at the national level on the morbidity and mortality of this disease, thanks to reports of cancer when the diagnosis is confirmed, but there are no studies that characterize the clinical epidemiological behavior and therapeutic diagnosis of bladder tumors in the Cuban population with this disease, especially in our service; there are only studies related to the behavior to be followed in these patients as well as the use of BCG as intravesical therapy.

Since ancient times, symptoms related to bladder tumours have been directly and indirectly mentioned and this disease has been referred to as the fleshing of the bladder[13,14].

Fifty percent of all bladder tumors are directly attributed to smoking. However, the exact mechanism of carcinogenesis

in smokers remains unknown. More than 60 carcinogens are present in tobacco, of which 4-amino-biphenyll, acrolein and oxygen free radicals induce urothelial tumours. Arylamines, which include amino-biphenyls, appear to be the main carcinogens in cigarette-induced bladder cancer. Smoking is also associated with alterations in p53 gene expression. Genetic polymorphisms in DNA repair and in phase I and II enzymes may potentiate urothelial damage.

This work provides information on the behaviour of this pathology in the urology service, as well as providing guidance on how to work on the basis of early diagnosis and therapy of this pathology. Thus improving health services, quality and life expectancy of patients.

Methods

For the diagnosis of bladder tumors, anamnesis is important, the symptoms and clinical signs found, as well as the hemochemical, imaging and histological diagnostic means confirm this nosological entity. A retrospective descriptive cross-sectional observational study was performed at the Urology Service of the Celestino Hernández Hospital, in the municipality of Santa Clara, Villa Clara Province, in the period 2014-2019.

The inclusion criteria are determined based on the existence of hospitalized patients diagnosed with papillary transitional cell bladder carcinoma and on their medical records according to the survey carried out for this research.

To conduct this study with a sample of 147 patients we used a multivariable system that included, age, sex, race, residence location, toxic habits that might be related to the disease, as well as personal and family pathological history possibly linked to the disease.

The absolute frequency and the relative frequency expressed in percent were presented in the tables; from these data some corresponding graphs were presented, generally pie and bar graphs to better illustrate the behavior of certain indicators.

Results

Based on the main general variables studied, the prevalence in the study group of patients between 55 and 74 years of age stands out, for 65% of cumulative frequency; however, 33.3% predominated in the age range 65 and 74 years, although there was very little difference with the age range 55 and 64 years. Male patients with 74.8% tripled their value over female patients (37 cases) in this entity. The white race with 84.4% and the rural area with 70.7% (104 cases) prevailed between half and one third of the total population (147 cases), analysis that is shown in figure 1.

Figure 1. Behaviour of bladder tumours according to age group, sex, skin colour and geographical area of patients admitted to the urology service between 2014-2019.

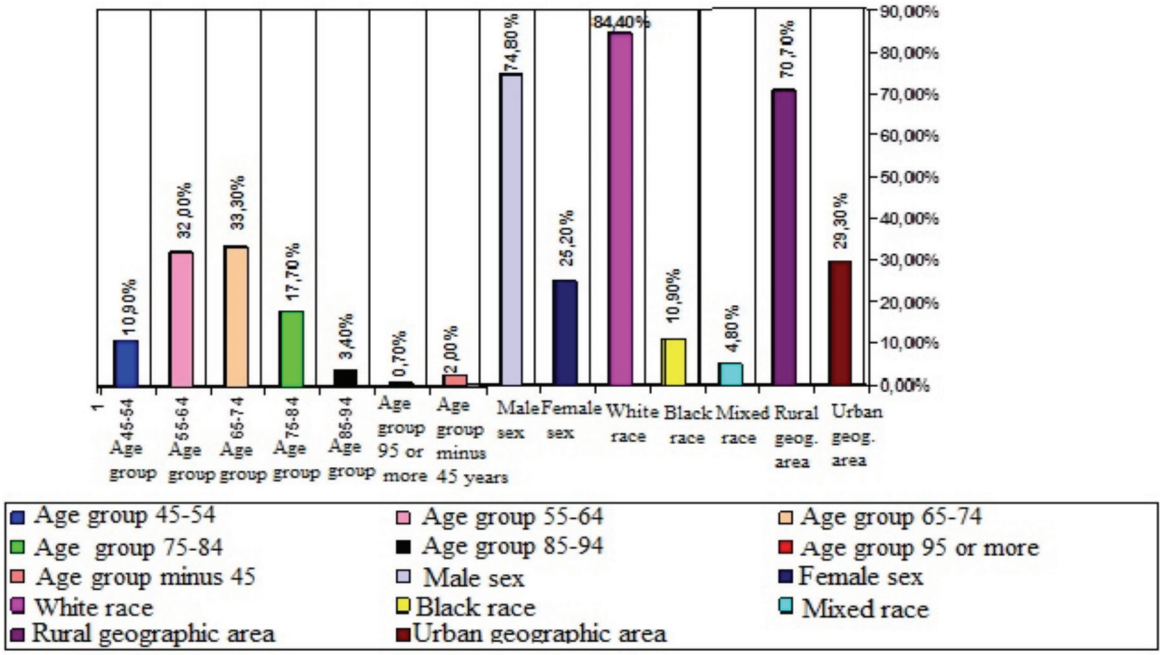


Figure 2. Behaviour of bladder tumours according to the toxic habits of patients admitted to the urology service between 2014-2019

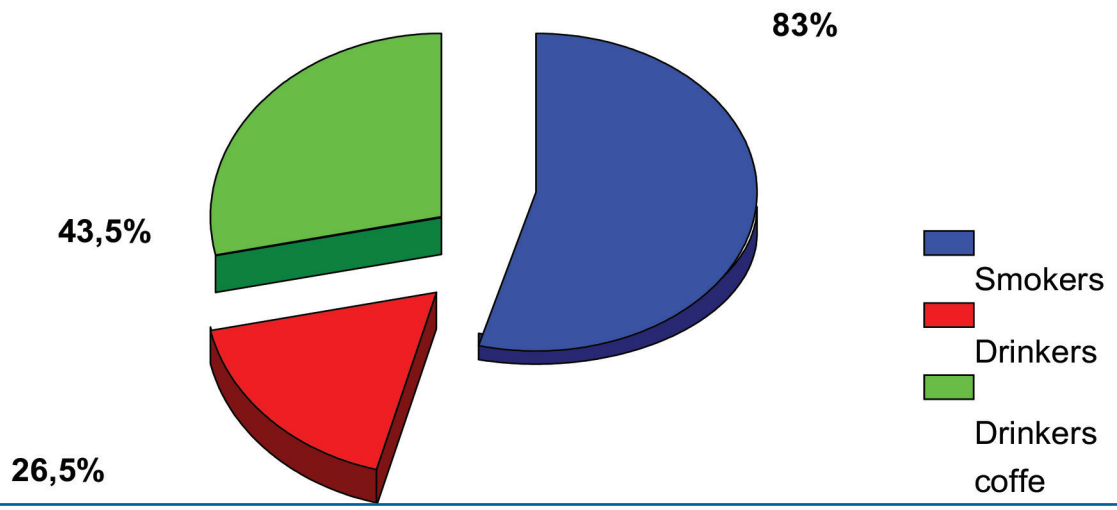


Figura 3. Behaviour of bladder tumours according to personal and family pathological history in patients admitted to the urology service between 2014-2019

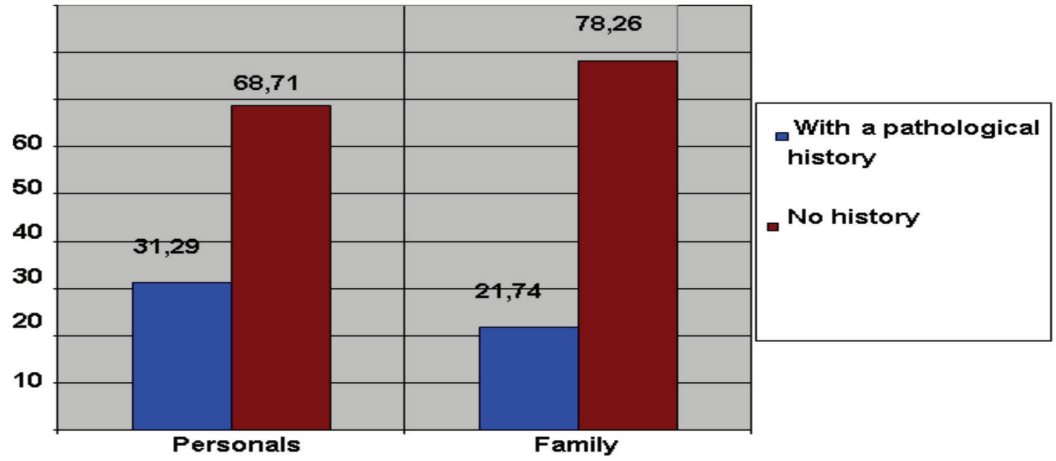
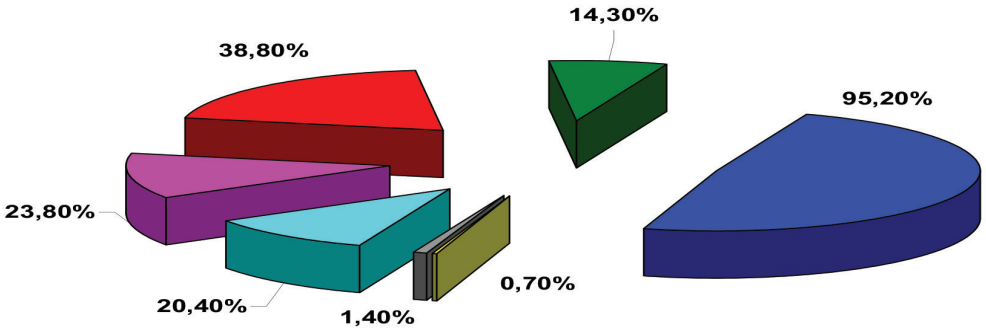


Figure 4. Behaviour of bladder tumours according to symptoms in patients admitted to the urology service between 2014-2019



The group of smokers was the largest with 83% (122 cases), followed by coffee drinkers with 43.5% (64 cases) and, to a lesser extent, alcohol drinkers with 26.5% (39 cases) as shown in Figure 2.

Of the total number of patients, 68.71% had no personal pathological history, only 31.29% presented this type of history. Family pathological history: 78.26% had no history and only 21.14% had a family pathological history as shown in Figure 3.

Hematuria was the most frequent symptom with 95.2% (140 cases), followed by irritative symptoms with 38.8% (57 cases), and followed by pain under the belly with 23.8% (35 cases) and general symptoms with 20.4% (30 cases) which are shown in Figure 4.

Discussion

Cancer is the second cause of death in Argentina, Cuba and Uruguay during the last decade, cancer mortality has shown a tendency to decrease in more developed countries[15] Bladder cancer is a low incidence malignant tumor, corresponding to 2% of all malignant tumors and 7% of the genitourinary system[16] Histologically, 90% of bladder tumors have a urothelial presentation (transitional epithelium), while 1% occur in smooth muscle of the bladder[17].

About nine out of 10 people with this cancer were over 55 years old. The average age at diagnosis was 73, and men were about three to four times more likely to develop bladder cancer in their lifetime than women. Bladder cancer was diagnosed almost twice as often in whites compared to blacks, and the presence of metastases to the lung and regional lymph nodes were the most affected sites.

Similar results were found in previous studies where in Cuba, the locations of stomach, colon-rectum, bile ducts and bladder in men showed a significant decreasing trend between 1990 and 2005. On the other hand, in a longitudinal study, mortality rates from bladder cancer in men were more than twice as high as in women. Since this is part of the group of tobacco-dependent neoplasms, its incidence and mortality should be affected by the prevalence of the habit and by changes in it over time[15].

The differences found in both genders can be attributed to the fact that women are less exposed to risk factors than men, and that their exposure (their increased tobacco use and exposure to high-risk working conditions) is more recent.[18]. An example is Spain, where dark tobacco is recognized as having a greater impact on bladder cancer[19].

Tobacco use can be considered an independent factor in the recurrence or progression of superficial tumors. However, smoker's debut more frequently with high-grade tumors, in a multiple way and of a size equal to or greater than 2 cm. significantly compared to non-smokers[20,21]. In addition, cigarette smoking is the single most important cause of bladder cancer and smokers have a two to four times higher risk of developing this neoplasm than the general population[22,23].

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