SURVIVAL OF PATIENTS WITH PROSTATE CANCER

Sobrevida de pacientes com câncer de próstata

Supervivencia de pacientes con cáncer de próstata

Original Article

Fabienne Camilo da Silveira Pirajá[1]
Rafael Bandeira Lages[1]
Uylma Assunção Costa[1]
João Batista Mendes Teles[1]
Viriato Campelo[1]

ABSTRACT

Objective: To analyze the survival after five years among patients treated of prostate cancer at Hospital São Marcos. **Methods:** A descriptive population-based epidemiological study performed in Teresina-PI, evaluating a hospital cohort consisting of 71 patients of Hospital São Marcos, enrolled in Hospital Cancer Registry (HCR) from 2000 to 2001, under ICD10 - C61. The variables considered in the evaluation of survival were: age group, tumor staging and skin color. The Kaplan-Meier method was used in the calculation of survival functions in five years and the Kruskal-Wallis test in comparison between variables. **Results:** The specific survival rate for prostate cancer was of 78.5% in five years. The death risk in this study increased with age and advanced stage at diagnosis (aged 80 or above = 60%; and stage IV = 63%). The Kruskal-Wallis test showed no statistically significant variation between groups. **Conclusion:** The age and advanced stage at diagnosis decreased patients' survival.

Descriptors: Prostatic Neoplasms; Survival Analysis; Prostatic Diseases.

RESUMO

Objetivo: *Analisar a sobrevida em cinco anos dos pacientes atendidos por câncer de próstata no Hospital São Marcos.* ***Métodos:*** *Estudo descritivo epidemiológico, de base populacional, realizado em Teresina-PI, avaliando uma coorte hospitalar composta por 71 pacientes do Hospital São Marcos, inscritos no Registro Hospitalar de Câncer (RHC), de 2000 a 2001, com CID10 - C61. As variáveis estudadas na avaliação de sobrevida foram: faixa etária, estadiamento do tumor e cor da pele. Empregou-se o método de Kaplan-Meier no cálculo das funções de sobrevida em cinco anos e o teste de Kruskal-Wallis na comparação entre as variáveis.* ***Resultados:*** *A sobrevida específica por câncer de próstata foi de 78,5% em cinco anos. O risco de morte neste estudo aumentou com a faixa etária e o estadiamento avançado ao diagnóstico (faixa etária de 80 anos ou mais = 60%; e estádio IV = 63%). O teste de Kruskal-Wallis não mostrou variação estatisticamente significante entre os grupos.* ***Conclusão:*** *A idade e o estadiamento avançados ao diagnóstico diminuem a sobrevida dos pacientes.*

Descritores: *Neoplasias da Próstata; Análise de Sobrevida; Doenças Prostáticas.*

RESUMEN

Objetivo: *Analizar la supervivencia en cinco años de los pacientes atendidos por cáncer de próstata en el Hospital São Marcos.* ***Métodos:*** *Estudio descriptivo epidemiológico, de base poblacional, realizado en Teresina-PI, evaluando una cohorte hospitalaria formada por 71 pacientes del Hospital São Marcos, inscritos en el Registro del Hospital de Cáncer (RHC), de 2000 a 2001, con CID10 - C61. Las variables estudiadas en la evaluación de la supervivencia fueron: la edad, el estadiamento del tumor y el color de la piel. Se utilizó el método de Kaplan-Meier para el cálculo de las funciones de supervivencia durante cinco años y la prueba de Kruskal-Wallis para la comparación de las variables.* ***Resultados:*** *La supervivencia específica del cáncer de próstata fue de un 78,5% en cinco anos. El riesgo de muerte en este estudio aumentó con la edad y el estadiamento avanzado del diagnóstico (edad de 80 años o más = 60%; y estadio IV = 63%). La prueba de Kruskal-Wallis no mostró variación estadísticamente significativa entre los grupos.* ***Conclusión:*** *La edad y el estadiamento avanzados en el diagnóstico disminuyen la supervivencia de los pacientes.*

Descriptores: *Neoplasias de la Próstata; Análisis de Supervivencia; Enfermedades de la Próstata.*

1) Universidade Federal do Piauí - UFPI - Teresina (PI) Brasil

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INTRODUCTION

Cancer is regarded, currently, as an important public health problem worldwide, not only due to the significant increase in its incidence in the population, but also due to the high costs arising from the prevention, diagnosis and treatment of individuals affected by this pathology[1]. According to the World Health Organization (WHO), cancer death in the world will increase by 45% between 2007 and 2030, going from 7.9 million to 11.5 million deaths. It is estimated that the number of new cases also suffer considerable increase: from 11.3 million in 2007 to 15.5 million in 2030[2].

Among the malignancies, prostate cancer is the most common and the one most increasing in incidence among men, besides being the second leading cause of deaths in Brazil. The increase in incidence rates of this disease can be partially explained by the evolution in diagnostic methods, the enhancement in the quality of the country's information systems and the increase in life expectancy in Brazil[3,4].

This cancer rarely produces symptoms before it is in its advanced form. However, in symptomatic cases, the patient complains about difficulty to urinate, weak urine stream and sensation of not emptying the bladder well. Sometimes, diagnosis occurs when the prostate cancer is already spread to other organs, hindering treatment. When the disease is detected early, through clinical examination and routine laboratory tests, such as digital rectal examination and measurement of prostate specific antigen (PSA), the disease is curable in 80% of cases[3].

According to the *Instituto Nacional do Câncer - INCA* (National Cancer Institute), the estimate for new cases of prostate cancer in Brazil was of 52,350 in 2010. The Southeast region was in the lead, with 25,570 new cases, and secondly was the Northeast, with 11,570 new cases. The state of Piauí had an estimate of 680 new cases (44.1 cases per 100,000 of population), while the capital, Teresina, had 210 new cases (57.8 cases per 100,000 of population)[4].

The lack of studies on the survival of patients treated for this neoplasm in the city of Teresina-PI justifies this work. This study aimed to analyze the five-year survival rate for prostate cancer among patients assisted at Hospital São Marcos between 2000 and 2001. The results of this research will enable a better understanding of the trend of prostate cancer in midsize cities, as Teresina, allowing the implementation of actions and health services that provide effective public policies and planning for higher cost-effectiveness in the treatment of this pathology in the town, guiding the actions to be promoted by the government.

METHODS

It is a descriptive, population-based, epidemiological study. For survival analysis, we carried out a hospital-based cohort, selecting patients registered at Hospital Cancer Registry (HCR) of Hospital São Marcos, in Teresina-PI, under number 61 of the International Classification of Disease (ICD-10 - C61) and date of diagnosis ranging from January 2000 to December 2001. The date of the diagnosis, tabulated in Hospital São Marcos's HCR, was considered as the beginning of survival time. In HCR, the diagnosis date refers to the date of histopathological confirmation, however, in the absence of such a test, the date of clinical diagnosis is used.

According to the Manual of Procedures and Routines of the Hospital Cancer Records 1999, HCR registers neoplasia cases into two distinct categories: analytical and non-analytical cases. In the present study, we used the analytical data, which encompasses the cases of neoplasia, whose planning and implementation of treatment were performed in the hospital and are priority targets in Cancer Registry. The standard form of the HCR in the manual was used for data collection.

Subsequently, data obtained in the RHC was confronted with the existing data in the archive of Deaths Declaration of Municipal Health Foundation of Teresina, in the period from January 2000 to December 2006, using the following data: name, date of birth and ICD. Dates of deaths due to prostate cancer or its consequences were considered as event. Patients who remained alive at the end of the study on December 31, 2006, were censored.

In survival analysis, SPSS 18.0 was used, employing the Kaplan-Meier method to estimate survival functions and estimate the curves grouping patients according to selected variables (age, disease staging and skin color). To compare the survival curves for each variable, the Kruskal-Wallis test was used. This study was approved by the *Comitê de* Ética *em Pesquisa da Universidade Federal do Piauí* (Research Ethics Committee of the Universidade Federal do Piauí) (0012.0.045.000-09)

RESULTS

Were included 71 patients, residents of Teresina, PI, originating from a hospital series tabulated in Hospital São Marcos's HCR, from January 2000 to December 2001 with CID 10 - C61. Of these patients, 17 (23.9%) died by the end of the observation period and 54 were considered censored for not having shown the event (death) until the end of follow-up. It was observed an average time of 964.59 days

(about 2 years and 6 months) elapsed between the patient's date of death and diagnosis date.

The characteristics of these patients according to age, stage, and skin color, are grouped in Table I. No cases aged 40 to 59 years were observed, while 29 (40.8%) patients were aged between 70 and 79 years. Regarding the staging at diagnosis, 30 (42.2%) were in stage IV and 24 (33.8%), in stage II. The skin color of patients was mainly non-white (n = 46, 64.8%).

Table I - Distribution of patients and deaths due to prostate cancer, according to the variables studied. Teresina-PI, 2000-2006.

Variables	Cases n (%)	Deaths n (%)
Age at diagnosis (years)		
40-49	0 (0.0)	0 (0.0)
50-59	6 (8.4)	1 (5.9)
60-69	20 (28.2)	4 (23.5)
70-79	29 (40.8)	5 (29.4)
80 or above	16 (22.5)	7 (41.2)
Stage		
I	8 (11.3)	0 (0.0)
II	24 (33.8)	3 (17.6)
III	8 (11.3)	1 (5.9)
IV	30 (42.2)	12 (70.6)
Not informmed	1 (1.4)	1 (5.9)
Skin color		
White	15 (21.1)	3 (17.6)
Non-white	46 (64.8)	13 (76.5)
Not informmed	10 (14.1)	1 (5.9)

Among the 17 patients who subsequently died, 7 (41.2%) were older than 80, 13 (76.5%) were non-white skin and 12 (70.6%) were stage IV (Table I).

By using the Kaplan-Meier method, the overall survival of patients with prostate cancer found in the city of Teresina, PI, during the study period was of 78.49%.

According to age, patients aged 80 or older had the lowest cumulative survival (60% before reaching five years), with high mortality before completing three years after diagnosis. Patients aged 60-69 and 50-59 years had a five-year survival of 78% and 80%, respectively (Figure 1).

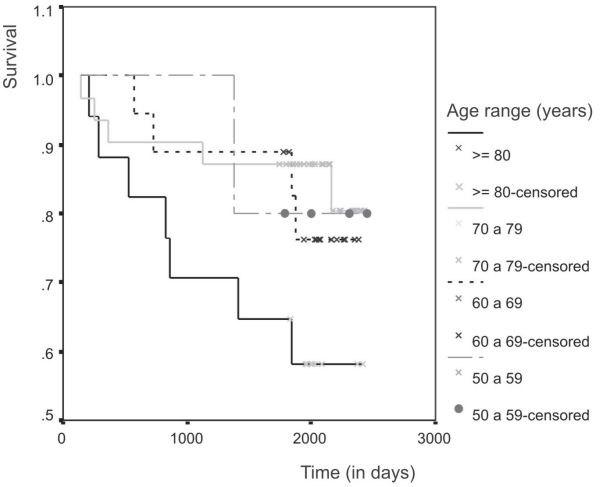

Figure 1 - Survival of patients with prostate cancer, according to age. Teresina-PI, 2000-2006.

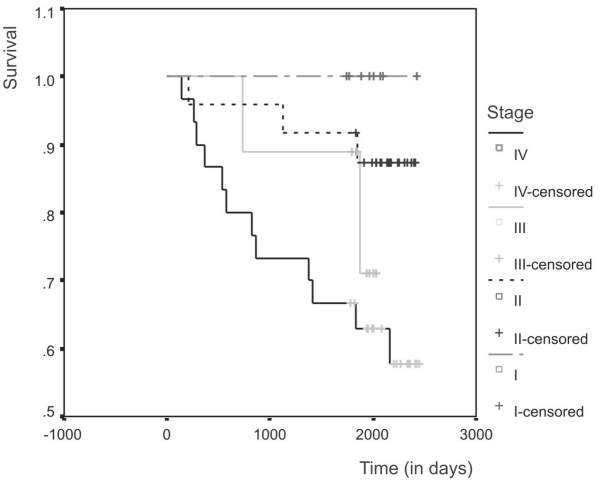

Figure 2 - Survival of patients with prostate cancer, according to stage. Teresina-PI, 2000-2006.

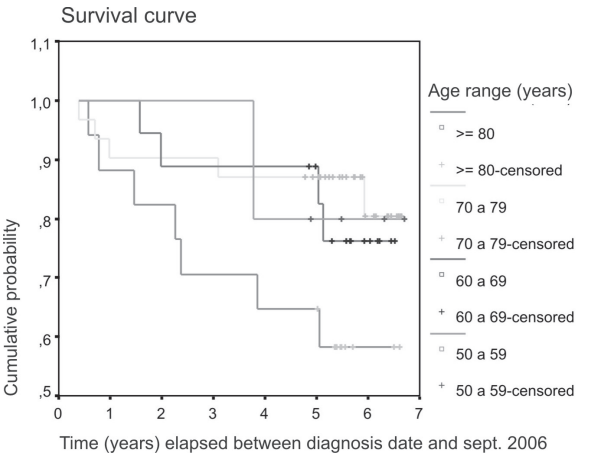

Figura 3 - Sobrevida dos pacientes com câncer de próstata segundo cor da pele. Teresina-PI, 2000-2006.

According to staging, patients in stage IV showed a cumulative survival before three years around 72%, dropping to 63% five years after diagnosis. As for patients with stage II and III, there was cumulative survival around 97% and 89% at three years and 89% and 92% at five years, respectively. Patients in stage I presented, throughout the study, a 100% cumulative survival (Figure 2). In the evaluation according to skin color, the survival at five years for patients registered as white was 79% and, for those considered mulatto, it was 80% (Figure 3).

The Kruskal-Wallis test showed that the variations found are not statistically significant regarding age range, staging and skin color, with $p = 0.832$, $p = 0.101$ and $p = 0.091$, respectively.

DISCUSSION

Mortality from prostate cancer presents significant growth in Brazil and, in a near future, tends to surpass the deaths from lung and stomach cancers in men, a fact already detected in the United States[5]. From 1980 to 1995, death rates from prostate cancer showed a positive percentage change in all Brazilian regions, doubling in the North and Northeast, increasing about 60% in the Midwest and around 25% in South and Southeast[6].

Not only in Brazil, but in several countries, including Argentina, Chile, Mexico, Japan, China, Belgium, Denmark, Bulgaria, Czech Republic, Ukraine, Romania, Poland, Cuba, Mexico and Russia, the death rate from prostate cancer has also been growing[7,8]. The analysis of these studies on mortality trends is very useful, not only for assessing the problem of a certain condition in a community, but also for seeking to estimate the effectiveness of primary and secondary preventive strategies in controlling the disease[9]. Apparently, health authorities are not much interested in implementing educational activities targeting this issue and, when they are available, men are not sensitive to them[10].

In some developed countries, where such strategies present greater effectiveness, an opposite reality is seen. In 2004, a reduction in mortality from prostate cancer was observed in the UK (down 2.0% per year since 1991), Austria (-2.1% per year since 1991), Italy (-2, 1% per year since 1988), in the United States (-5.1% per year since 1994), Canada (-2.9% per year since 1991), France (-1.9% since 1988) in Germany (-3.6% per year since 1994), Australia (-4.9% per year since 1994) and Spain (-1.8% per year since 1994)[11].

The increase in the use of prostate-specific antigen test (PSA), in the late 1980s and early 1990s, is considered the main cause for the reduction in mortality from prostate cancer in these countries, as it allowed an early diagnosis of this neoplasia[7,11,12]. In Brazil, its introduction in the 1990s is pointed as the main factor for the largest registry of new cases of prostate cancer, besides the improvement in the quality of information systems and the increase in life expectancy. This, however, was not accompanied by a reduction in mortality[13].

There are still many controversies with regard to the introduction of PSA for mass population screening[14,15]. A randomized study that evaluated 162,000 men with a mean follow-up of 9 years showed a reduction of 20% in deaths from prostate cancer among individuals in the group who performed the screening. However, besides the confidence interval of 95% being quite large (2-35%), this study also concluded that 1,410 men should be screened and 48 would need to be treated to prevent one death[16].

Aging is considered the most significant risk factor for prostate cancer. Its incidence in men aged over 50 years is greater than 30%, getting continuously higher to approximately 80% at 80 years[17]. Currently, over 50% of new cases are diagnosed in the elderly and at least 60% of deaths occur in this age group[18].

As for the five-year survival of patients with prostate cancer residing in Teresina, PI, diagnosed in 2001, the identified rate of 78.49% is lower than the values found in a study conducted in Rio de Janeiro[19]. These authors found specific survival from prostate cancer of 88% in five years and 71% in ten years, in a hospital cohort of 258 patients with localized prostate adenocarcinoma, assisted from 1990 to 1999, however, were markers, regardless of worse prognosis, Gleason score greater than 6, PSA greater than 40 ng/mL, stage B2 of Jewett-Whittmore and white skin color[19].

In a study conducted in São Paulo, from 1991 to 2000, the biochemical recurrence-free survival at five years, in turn, was 86.6%, 62.7%, 39.8% and 24.8% for PSA less than 4, between 4.1 and 10; between 10.1 and 20 and greater than 20 ng/mL, respectively[20]. In the United States, the five-year survival rate for prostate cancer ranged from 64.0% in 1973 to 92.9% in 1990[21].

In a pioneering comparative study on survival in cancer patients in five continents, which analyzed data from 101 population-based cancer registries of 31 countries, including individuals aged 15 to 99 years who were diagnosed with cancer (among them, the prostate) from 1990 to 1994 and were followed until 1999, wide variation was observed between regions in five continents. The rates varied from values higher than those found in Teresina - like 80% or more in the United States, Canada and Austria - to values lower than in our study - as 40% in Denmark, Poland and Algeria. Also according to that study, in Brazil, the five-year survival rate of prostate cancer was 34.4% in Campinas and 55.7% in Goiania, while 13.4% and 21.8% of men in Campinas and Goiânia, respectively, were deceased one month after diagnosis[22].

The survival curve in our study showed a decrease with the progression of disease staging, observing lower patient survival in stage IV. The staging is usually the determining factor for the survival of patients, but the available treatments are most effective if started before metastases have occurred[3].

Also in relation to the staging of the disease, a very alarming finding in our study was the high proportion of patients in advanced stage (42.2% in stage IV versus only 11.3% in stage I). This profile demonstrates that patients mostly seek specialized care when symptoms are already present, indicating the lack of male guidance concerning prostate cancer and the need for secondary preventive actions in the region[3,17].

In the present study, the survival rate showed no variations, as to the variable skin color (79% to 80% for whites and non-whites). It is noteworthy, however, that the majority of cases (64.8%) and the majority of deaths (76.5%) occurred in non-whites. The incidence of prostate cancer differs substantially between ethnic groups, however, African Americans have incidences of 10 to 40 times higher than Asians[23]. A retrospective study[24] suggest that race is an independent prognostic factor, but this type of study usually does not adjust patients at initial staging. Other researcher[25] observed that the black race was associated with lower overall survival and specific survival ($p = 0.04$, relative risk = 1.24 and $p = 0.016$, relative risk = 1.41, respectively). However, after adjusting patient for risk group and type of treatment, race was no more associated with prognosis ($p > 0.05$), suggesting that the trend for the difference in survival is because tumors were detected in more advanced staging in black men. An U.S. study[26], in turn, identified patterns of incidence, survival and mortality similar in men of both white and black skin.

CONCLUSION

The death rate from prostate cancer showed heterogeneous evolution according to age with significant growth among the aged 80 years or more. The overall survival was 74.49%, being lower in this range and in more advanced staging. It is also noticeable that the lower survival of patients diagnosed in more advanced stages of the disease demands measures by the sectors responsible for the earlier diagnosis of this cancer, aimed at improving the patient's quality of life and, thus, increased survival.

Using local and national database, which show the profile of patients in a given region, demonstrates the possibility of conducting researches that will bring greater benefits on cancer in Brazil, demonstrating their regional peculiarities, which may be useful in public policy development to modify the identified profile.

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First author's address:
Fabienne Camilo da Silveira Pirajá
Rua Campus Universitário Ministro Petrônio Portella - Universidade Federal do Piauí / Centro de Ciências da Saúde / Departamento de Parasitologia e Microbiologia / SG-16
Bairro: Ininga
CEP: 64049-550 - Teresina - PI – Brasil
E-mail: fpiraja@uol.com.br

Mailing address:
Viriato Campelo
Rua Campus Universitário Ministro Petrônio Portella - Universidade Federal do Piauí / Centro de Ciências da Saúde / Departamento de Parasitologia e Microbiologia / SG-16
Bairro: Ininga
CEP: 64049-550 - Teresina - PI - Brasil
E-mail: viriato.campelo@bol.com.br