ANALYSIS OF THE USE OF BRACHTHERAPY TREATMENT IN PROSTATE CANCER PATIENTS ATTENDED IN GENERAL PUBLIC HOSPITAL OF PALMAS IN 2015

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ABSTRACT

Approximately 68.000 prostate cancer cases are estimated per year in Brazil, but many of these will present a bad prognosis due to the difficulties of access by users of public health services and the precariousness of many of these. This scenario is determinant for the occurrence of many cases of advanced disease, late diagnosis, worse clinical condition and higher risk of death. The state of Tocantins has a humble health structure that unfortunately does not yet have brachytherapy treatment for this condition and offers few beds for surgical treatment, while radiotherapy, performed in only one city in the state, coexists with constant problems and interruptions of care. The objective of this study is to analyze the population of patients with prostate cancer treated at the General Public Hospital of Palmas, the main state reference, in the year 2015, and specifically to determine how many of the patients could have been treated through brachytherapy. After approval by the Ethics and Research Committee, data collection, analysis, organization and treatment were carried out using BioEstat® statistical software, aiming at consolidating information, producing results and obtaining answers to the objectives of this study. The study demonstrated that the majority of these patients came from other localities, with advanced clinical staging, adenocarcinoma histological type, but with 19% of cases presenting criteria for treatment by brachytherapy, which would lead to a significant decrease in the demand for beds and referrals to other centers.

1. INTRODUCTION

Prostate cancer is the most common tumor in men in all regions of the country, with the exception of non-melanoma skin tumors[4]. An US's estimate is that approximately 90% of the cases are diagnosed in the localized tumor phase, with five-year survival rates of 100% [3].

Approximately 68.000 prostate cancer cases are estimated a year in Brazil, but many of these will present a poor prognosis due to the difficulties of access by users of public health services and the precariousness of many of these. This is a determining factor for the occurrence of many cases of advanced disease, late diagnoses, poor clinical condition and the highest risk of death[8].

The State of Tocantins presents a humble health structure, characterized by the centralization of cancer and surgical services. Regarding the treatment of prostate cancer, the state has surgery, external radiotherapy and hormonal therapy, but it does not offer the possibility of brachytherapy treatment[12].

The General Public Hospital of Palmas is the largest hospital unit in the state, a reference for surgical treatment of prostate cancer, but it has few urological beds that are shared with other pathologies, for example benign diseases and urological urgencies. Thus, the objective of this research is to analyze the population of patients with prostate cancer attended at the Public General Hospital of Palmas in the year 2015.

1.1.**Prostate carcinoma**

According to the World Health Organization (WHO), prostate cancer is the second most common in men and the sixth most common cause of death in men. In Brazil, in 2018, 68.220 new cases of prostate cancer were projected[4].

Prostate carcinoma is the second most common neoplasm in men (more than 30% of new cancer cases) and the second cause of cancer death (more than 11% of cancer mortality). The estimate is that one in six men will suffer during their lifetime from prostate carcinoma[1].

The appearance of the new marker, prostate specific antigen (PSA), allowed the diagnosis of prostate carcinoma to be made at much earlier stages and in much younger men. These factors allowed profound changes in the therapy of the disease.

Currently, the disease is often localized at the time of diagnosis; although there is certainly a large number of patients in whom the carcinoma is diagnosed but who will never develop the disease with clinical significance. From this group of patients, some still young, will be subjected to therapies that probably would not need (overtraining) and suffer from their morbidities.

Effective curative therapies accepted by today's scientific community are radical prostatectomy, external radiotherapy, and interstitial radiation therapy, also called brachytherapy[11]. Given the apparently identical efficacy of the treatments, the choice of the appropriate treatment will be made considering the action of the morbidities related to each type of treatment[1].

Therefore, it is in the morbidity and side effects or in the impact on the quality of life that the different therapies of localized prostate carcinoma should be distinguished.

In this context, and in the last 10 years, there has been a conceptual and effective evolution of the treatment of localized prostate carcinoma, with the development of surgical and nonsurgical curative therapies. The philosophical concept underlying this progress is that of miniinvasiveness with the aim of reducing therapeutic morbidity while maintaining patients' quality of life, but without losing oncological efficacy. Accomplished, it is intended to minimize hospital stay and professional inactivity time[2].

2. MATERIALS AND METHODS

2.2. Characterization from the research

The methodological framework chosen for the study is the quantitative method, with the characteristics of a retrospective, cross-sectional and descriptive analysis.

2.3. Samplig and data collection

It was composed only of patients with prostate cancer who were admitted to the oncology, radiotherapy and urology departments of the General Public Hospital of Palmas Tocantins from January to December 2015. It was not considered individuals enrolled after this date.

The data collection of the patients attended by the departments of Oncology, Radiotherapy and Urology of the General Public Hospital of Palmas - Tocantins, from January to December 2015, patient data were collected manually and corresponded to a review medical records.

2.4. Research area

This is a retrospective study carried out in the largest health unit in the State, the General Public Hospital of Palmas, popularly known as HGPP, which, despite its large dimensions, coexists with the main problems of the Health Unic System, known as SUS, such as overcrowding and shortages.

It is the most complex facility within the state secretary's organization chart, where most of the cancer cases in the State are directed, and some, even, come from neighboring states such as southeastern Pará, eastern Mato Grosso and southern Maranhão and Piauí.

The unit provides health care at the secondary / tertiary level, with cases of prostate cancer being directed to subspecialty outpatient clinics (Oncology, Urology and Radiotherapy), from where they are staged and referred to the defined treatment.

Cases that are prone to radiation therapy are referred to the Regional Hospital of Araguaína (HRA), as it is the only state public unit that provides this treatment. Those who have indication of radical surgery (prostatectomy), chemotherapy or hormone blockade are treated at the General Public Hospital of Palmas. In addition, those who could be treated with Brachytherapy, unfortunately, are referred to other states or conducted with one of the other therapeutic modalities, since brachytherapy is not yet offered by the state health department.

2.5. Statistical analysis

The first stage of data collection was the elaboration of a form, applied by the researcher responsible for obtaining data from these patients, such as age, color, origin, clinical and histopathological staging of the disease, time elapsed between diagnosis and onset of treatment.

Subsequently, followed the creation of an information bank, always guarding the confidentiality of each patient. Data analysis, organization and processing, quantitative method, using BioEstat® statistical software, was used to consolidate information, produce results and obtain answers to the objectives of this study.

Thus, the quantitative data were evaluated through two variables: qualitative and quantitative variables, where the qualitative variables were distributed by absolute and relative frequencies. Meanwhile, the quantitative variables were presented by measures of central tendency of variation with the use of D'Agostino-Pearson test to evaluate their normality.

The correlation analysis between the clinical staging and the treatment used was performed through the Pearson Correlation Coefficient (r). For the variables to indicate a normal distribution, the alpha level was set at $p < 0.05$ to test the rejection of the null hypothesis, with random samples.

3. RESULTS

The records of the 36 patients received by this service in the year 2015 were analyzed. The age of the individuals in the sample varied from 56 to 95 years of age, where the majority is in the age group of the sixth decade of life, compatible with the nature of the pathology studied.

In relation to prostate-specific antigen (PSA), which is an important and illuminating marker in relation to disease staging and evolution, levels ranged from 2.6 to 257 nanograms per milliliter (ng / ml). A significant number of patients with very high PSA (greater than 20 ng/ml) were found, which was determinant for most individuals to be classified as high risk for biochemical recurrence in the next 5 years post treatment.

This fact can be justified by the immense concentration of specialized health services, offered in a few units, making access difficult and contributing to the diagnosis in the more advanced clinical phase.

During the analysis of the Gleason Score (degree of cell differentiation), which is another valuation given on the disease, since it is taken into account for the choice of treatment, it was verified that 15 individuals (41.66%) had a low score (less than 7), which means a good degree of cell differentiation and consequently lower tumor aggressiveness. Nineteen of them (38.88%) had a moderate degree of differentiation and 8 (22.22%) had a high Score (greater than 7).

Table 1: Results of Risk Classification for Prostate Carcinoma [14]

Low Risk	Intermediate Risk	High Risk
PSA <10	PSA =10 a 20	PSA > 20
Gleason < 7	Gleason = 7	Gleason > 7

Analyzing the data set of the PSA value, local tumor staging and degree of cell differentiation, the probability of recurrence-free survival of the disease was estimated at 5 years after treatment.

Patients who are classified as low risk have a chance of 75-90% survival free of biochemical recurrence in five years, while those with intermediate risk present between 50 and 70% and those with high risk approximately correspond to 25 to 33 % chance.

In the sample analyzed, 24 patients (66.66%) were in the high-risk group, 9 (3.24%) were classified as intermediate risk and 3 (8.33%) were low risk.

These are the criteria for treatment of prostate cancer by brachytherapy that admit as ideal those in which the individual has localized disease, that is, restricted to the prostate gland (at most T2, in the TNM staging) and gland measuring no more than 60 cc (cubic centimeters). It was verified in this study that only 13 subjects (36.11%) had compatible requirements and could have been treated by this therapeutic modality, whereas 23 patients (63.88%) did not.

Table 2: Results found in the analyzed sample

Low Risk	Intermediate Risk	High Risk
8.33%	3.24%	66.6%
Treatment of brachytherapy	Other treatment	
36.11%	63.88%	

It is noted how much this type of treatment is important and needs to be offered.

It is necessary in any scenario, especially for the reality of overcrowded public service, insufficient vacancies for hospitalization and radiotherapy, as well as the lack of an efficient pacing for patients who need transfers to other locations.

Table 3: Gleason scale for prostate cancer [14]

GLEASON < 7	Well-differentiated, low grade / less aggressive tumors
GLEASON = 7	Moderately differentiated tumors, intermediate grade
GLEASON > 7	Poorly differentiated high grade / less aggressive

4. CONCLUSIONS

The study was carried out in patients with prostate cancer who began follow-up at the General Hospital of Palmas in 2015, aged 56 to 95 years, with the aim of alerting the progress of the disease in the future.

It was observed those that were classified as high risk for disease progression in the next 5 years, but that a relevant amount (36.11%) could still have been treated through brachytherapy.

This treatment modality allows bed optimization and lower cost per patient. As a suggestion for other future work indicates an analysis of the impact on the budget of this treatment for the state health secretariat with the goal of implanting such technique in the state.

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