BJRS

BRAZILIAN JOURNAL
OF
RADIATION SCIENCES
09-01A (2021) 01-13

Analysis of patients with prostate cancer care at a reference hospital in the state of Tocantins, suitable for brachytherapy

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ABSTRACT

Observation and identification of predictive factors for results and morbidity are essential in the ideal selection of patients who can use brachytherapy as a treatment modality for prostate cancer. Thus, the objective of this research is to analyze the population of patients with prostate cancer treated at the General Public Hospital of Palmas in 2015, in the state of Tocantins. The method used was quantitative, with the characteristics of a retrospective, transversal and descriptive analysis. Held in the largest state health unit, the General Public Hospital of Palmas that, despite its large dimensions, lives with the main problems of the Unified Health System, such as overcrowding and shortages. It was found that most of the patients seen corresponded to the age of 70 to 79 years, making 45%, followed by patients aged between 60 and 69 years, with 33%. Most of the individuals attended were from the state of Tocantins, but some lived in an adjacent city in the state of Pará. Data related to the Gleason score showed that there was a predominance of levels 6 and 7 indicating intermediate grade tumors, considering that the most of the observed population was older. It was concluded that the analyzed patients had a predominant staging of CaP II and III, thus most of the individuals, 23 of the 35 analyzed, were not able to undergo brachytherapy due to the high degree of disease staging.

Keywords: **brachytherapy, adenorcarcinoma of prostate, Tocantins.**

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 [1]. A sharp increase in incidence has been observed due to the serial detection programs in asymptomatic patients, which also allowed the new cases to be diagnosed, mostly, in the early stages of the disease. An American estimate is that approximately 90% of cases are diagnosed in the localized tumor phase, with 100% five-year survival rates [2]. Approximately 68 thousand cases of prostate cancer are estimated per year in Brazil, but many of them will have a poor prognosis due to the difficulties of access by users of public health services and the precariousness of many of these. This scenario is decisive for the occurrence of many cases of advanced disease, late diagnoses, poor clinical condition and increased risk of death [3]. The State of Tocantins has a humble health structure, characterized by the centralization of oncological and surgical services. Regarding the treatment of prostate cancer, the state has surgery, external radiotherapy and hormonal therapy, but unfortunately, it still does not offer the possibility of brachytherapy treatment [4]. This entire sample of patients is referred to two cities in the state and need to deal with a very long expectation of treatment, since surgery (radical prostatectomy) and hormone therapy are only performed in two hospitals in the state network, while radiotherapy only at the Araguaína Regional Hospital (HRA). In addition, the infrastructure for the treatment of prostate cancer in the state of Tocantins is unable to meet the demand and many individuals seek care in other states. Those who stay have to live with the reality of crowded hospitals, waiting in line for surgery and radiotherapy. The General Public Hospital of Palmas is the largest public hospital in the state, a reference for surgical treatment of prostate cancer, however it has only 5 urological beds to be shared with other pathologies, for example benign diseases and urological emergencies. Radiotherapy is a treatment modality capable of improving tumor control, relieving symptoms associated with the disease and improving the quality of life of cancer patients worldwide. One of the main advances in this area was the use of image-guided radiotherapy, known as IGRT [5]. However, this type of treatment is carried out only in the city of Araguaína, in the extreme north of the state, and its capacity is expected to expand with the installation of yet another linear accelerator, which has

ISSN: 2319-0612
Accepted: 2021-04-04

yet to be determined. Now, service interruptions and the need to refer patients to neighboring states like Maranhão and Goiás are constant.

2. MATERIALS AND METHODS

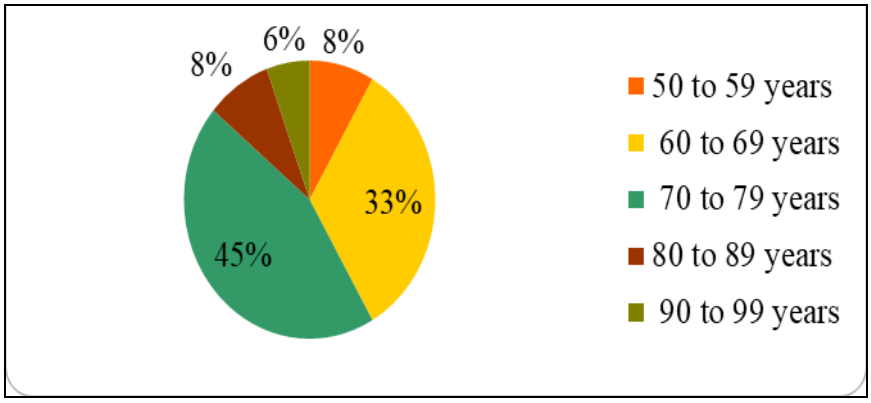
The methodological framework chosen for the study is the quantitative method, with the characteristics of a retrospective, cross-sectional and descriptive analysis. The population consists of patients with prostate cancer treated in the departments of oncology, radiotherapy and urology at the General Public Hospital of Palmas, Tocantins, a state reference for this type of disease, from January to December 2015. It was adopted as an inclusion requirement patients diagnosed with the disease treated at HGPP, regardless of the clinical stage in which they were, and who have clinical and epidemiological data properly recorded in their files. With the collection of patient data, which meet the inclusion criteria, attended by the departments of Oncology, Radiotherapy and Urology at the General Public Hospital of Palmas, from January to December 2015, through manual collection and documentary review of the medical records, with the Medical Archive Service (SAME) of that institution. This is a retrospective study to be carried out in the largest state health unit, the General Public Hospital of Palmas, popularly known as HGPP, which, despite its large dimensions, lives with the main problems of the SUS (Unified Health System), such as overcrowding and shortages.
It represents the installation of greater complexity within the organization chart of the state secretariat, and there converge the vast majority of cancer cases in the state and some from neighboring states such as southeastern Pará, eastern Mato Grosso and southern Maranhão and Piauí. The unit provides health care at a secondary/tertiary level, with cases of prostate cancer directed to outpatient clinics in the subspecialties (Oncology, Urology and Radiotherapy), where they are staged and referred for defined treatment. Cases in which the treatment of choice is radiotherapy are referred to the Regional Hospital of Araguaína (HRA), as it is the only state public unit that provides this treatment. Those with indication for radical surgery (prostatectomy), chemotherapy or hormonal block are treated at the General Public Hospital of Palmas itself. And, those who could be treated with Brachytherapy, unfortunately, are sent to other States or conducted with one of the other therapeutic modalities, as it is not yet provided by the State of Tocantins.

ISSN: 2319-0612
Accepted: 2021-04-04

3. RESULTS AND DISCUSSION

Graph 1 shows the age range of patients with prostate cancer that make up the sample of this research, where it can be seen that 45% of the patients analyzed corresponded to the range of 70 to 79 years and 33% belonged to the range of 60 to 69 years.

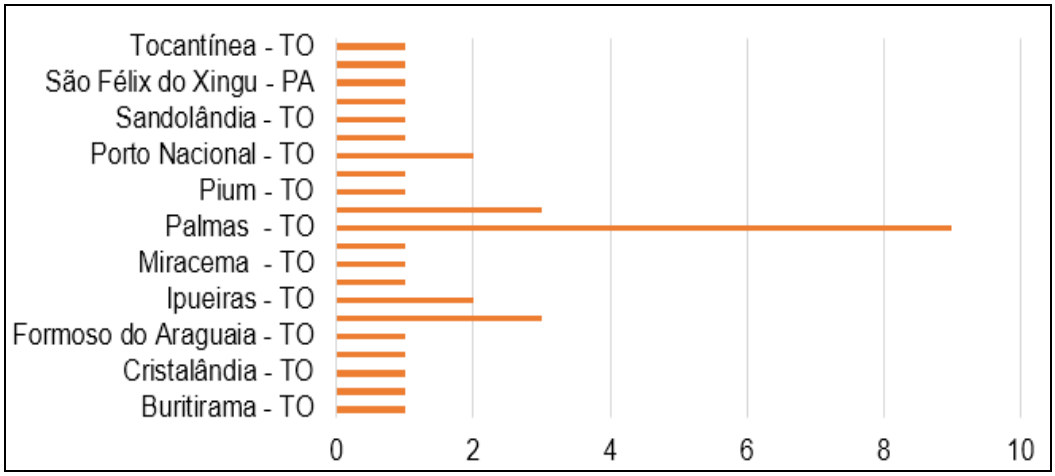
Graph 1: Age range of patients analyzed.



The report by the National Cancer Institute [1] for the 2018-2019 biennium indicated 68,220 new cases per year, with an estimated risk of 66.12 for every 100,000 men. INCA data (2017) detected an estimated risk of 61.82 men. This shows the growth of the CaP that, in the male population worldwide, only loses to lung cancer. The prostate cancer is the second cancer that kills the most in Brazil [6], since the INCA records of 2014 showed that there were about 14 thousand deaths, with a mortality rate of 14.91 per 100 thousand men, while that in 2012 the death rate was 13,354 and the death rate was 13.1 per 100 thousand men [7]. Age is a worrying risk factor for prostate cancer, since 62% of diagnosed cases occur in men aged 65 or over and the risk of becoming ill is increased with age [8]. In this study, it was noticed the predominance of men diagnosed with prostate cancer between 70 and 79 years of age. Regarding the origin, the patient's place of residence shows that there was a predominance of individuals from the city of Palmas, state of Tocantins, however, there are also individuals from other states, such as Pará that borders on the state of Tocantins (GRAPH 2).

ISSN: 2319-0612
Accepted: 2021-04-04

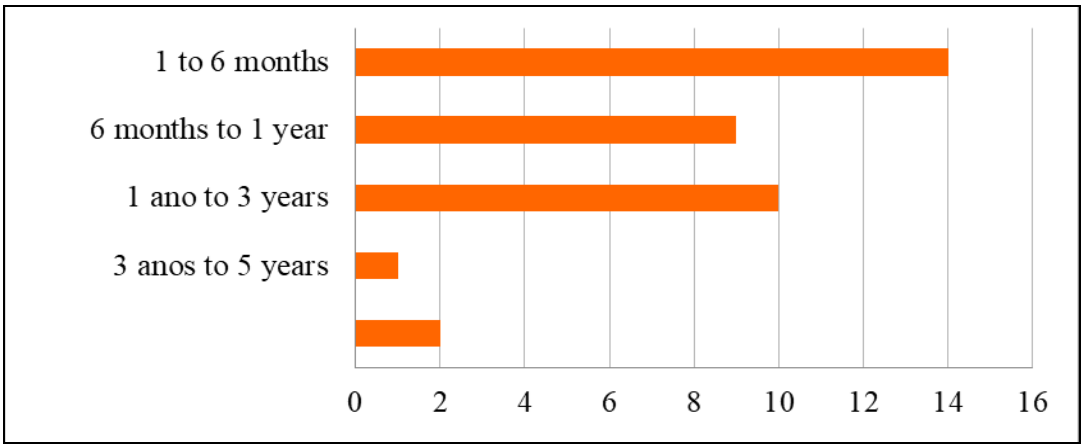
Graph 1: Place of origin of the patients analyzed



The choice to seek medical attention in the face of a change in health depends a lot on the economic, social, demographic and epidemiological situation [9]. It may even influence the choice of the institution, whether public or private. In addition, cultural, economic and political factors are constantly changing, which is why the importance of monitoring such aspects to propose effective public measures to combat the CaP. The Brazilian Society of Urology recommends that the antigen-specific test, known as PSA, for prostate cancer be performed annually, associated with the clinical examination, rectally, for men in the age group between 50 and 80 years deity. In men who have relatives, in 1st degree, with a positive diagnosis of prostate cancer, the tests should start at the age of 40 [10]. Graph 3 shows the time between diagnosis and the start of treatment. It is noted that there was a predominance between the diagnosis and treatment of prostate cancer from 1 to 6 months, a time considered as good or reasonable, however, for 27.77% this time varied between 1 to 3 years, which is considered a very long and inadequate time, as it allows disease progression and impaired therapeutic results [11]. Cancer is an aggressive disease, with high mortality rates. Thus, the importance of detecting cell alteration from the beginning, early, so that the treatment is effective, a fact that shows the need for more effective screening policies [1]. Universal screening of the entire male population (disregarding age and family history) has different aspects, since it can diagnose, "among others, prostate cancer of low aggressiveness, which does not need treatment, whose patients are submitted to biopsies, which have potential complications (local infection), and, eventually, radical treatments with a potential impact on quality of life "[12].

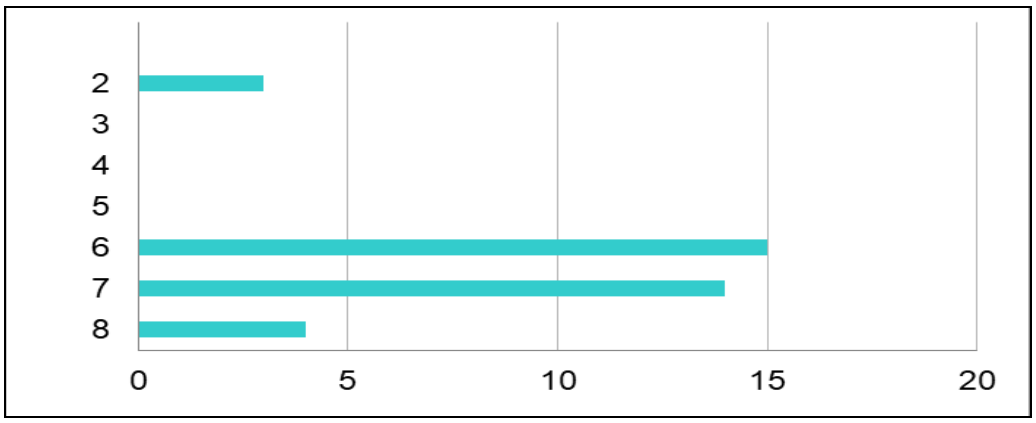
ISSN: 2319-0612
Accepted: 2021-04-04

Graph 2: Time between diagnosis and start of treatment of the patients analyzed



Therefore, to determine the most appropriate treatment, several factors must be observed, such as the Gleason score, staging, age, the presence of comorbidities and the possible side effects of the treatment. Graph 4 shows the data obtained in relation to the total score in relation to the Gleason scale, which varies from 2 to 10.

Graph 3: Gleason scale of the patients analyzed

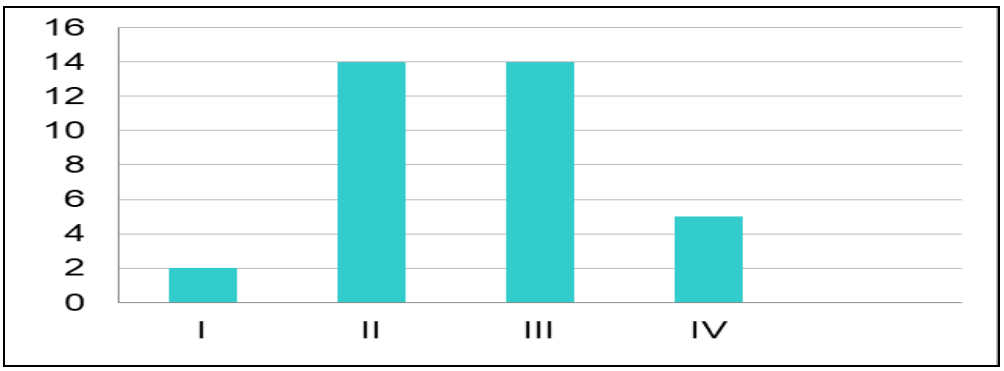


The data referring to the Gleason scale are fundamental, since the histological grade represents, in each case evaluated, a morphological characteristic that can estimate the cases of more aggressive biological behavior of cancer [13]. Thus, the Gleason score stands out as an important pathological parameter for risk stratification and therapeutic decision-making in patients with prostate cancer [14]. The Gleason score is a score given to prostate cancer based on its microscopic

ISSN: 2319-0612
Accepted: 2021-04-04

appearance, it can range from 2 to 10. A score 2 points to a better prognosis, while a score 10 indicates a worse one. The final score is a combination of two different scores, which vary from 1 to 5 each. Tumors with a Gleason score of 2 to 6 are considered to have a good prognosis. However, in this research, there was a predominance of levels 6 and 7 indicating intermediate grade tumors. Gleason's graduation observes the architectural pattern of CaP, where 1 is well differentiated and 5 is poorly differentiated [15]. Normally, the Gleason scale is associated with the staging of the disease in order to observe the indicated treatment so as not to compromise the patient's quality of life and effectively reach the tumor. The treatment of prostate cancer ranges from active surveillance to treatment with hormonal block, radiotherapy and surgery, prostatectomy. Therefore, the importance of relating several factors, such as Gleason score, staging, age, side effects or the presence of other comorbidities [16]. It was determined that Gleason scores with values from 8 to 10 have a greater possibility of recurrence after primary treatment, as well as greater lethality when compared to values from 2 to 6. However, level 7 is quite heterogeneous, because when it is caused by the sum of 4 + 3 it is classified as high, however, 3 + 4 belongs to the lowest level of recurrence [15]. For patients who are at low risk of aggression and recurrence and who are not prone to active surveillance, in addition to those at intermediate risk, the recommended treatment option is radical prostatectomy or radiotherapy, whose cure rates are 95% and 75%. % respectively, in 10 years [17]. However, patients considered to be at high risk should undergo more aggressive treatment due to the metastatic potential of the disease, thus performing a prostatectomy that effectively reduces the tumor and serum PSA levels. Graph 5 shows that the analyzed patients had a predominant staging of CaP II and III.

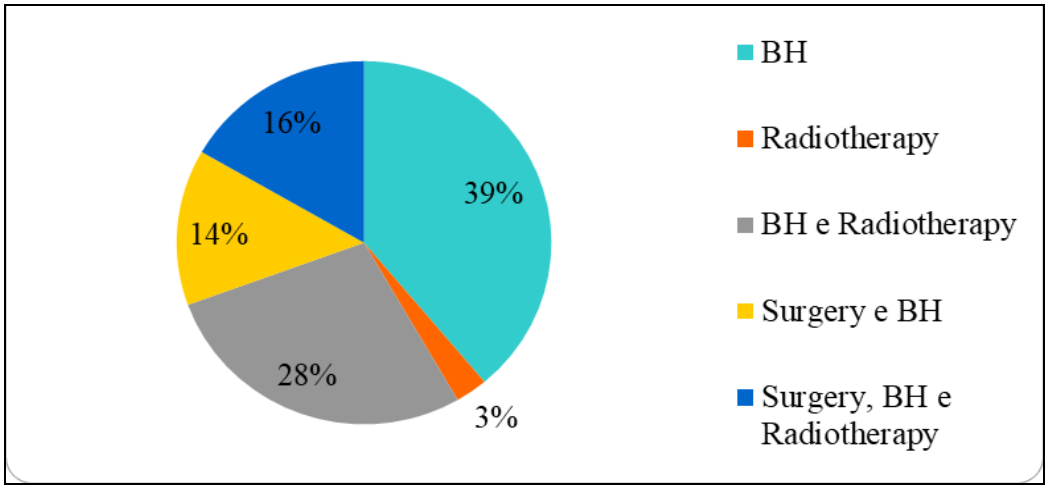
Graph 4: Gleason scale of the patients analyzed



ISSN: 2319-0612
Accepted: 2021-04-04

The first analysis of the clinical staging of the CaP occurs through digital rectal examination, PSA measurement. In specific situations, a chest X-ray, bone scans, computed tomography or magnetic resonance imaging of the pelvis and abdomen may be necessary for the best assessment of possible metastases [18]. Regarding the treatment used, there were different therapeutic approaches since the sample was in different stages of the disease. It is noted in Graph 6 that the treatment of hormonal block (BH) was the most used with 39%, then the association of BH and radiotherapy with 28%, and thirdly the association between BH, surgery (prostatectomy) and radiotherapy with 18 % of total patients surveyed. The treatment aims to prevent the individual's death and disability resulting from the CaP, reducing complications related to interventions [13]. Patients considered to have low or intermediate risk CaP have low PSA, Gleason less than or equal to 7 and the disease located in the prostate. For those patients who have a life expectancy greater than five years and without surgical contraindication, radical prostatectomy is recommended [19]. Depending on the risk, pelvic lymphadenectomy can also be performed together. In this surgery, the prostate and seminal vesicles are removed entirely. The main side effects of radical prostatectomy are erectile dysfunction and urinary incontinence, advancing age can potentiate post-surgical complications [20].

Graph 5: Types of treatments performed

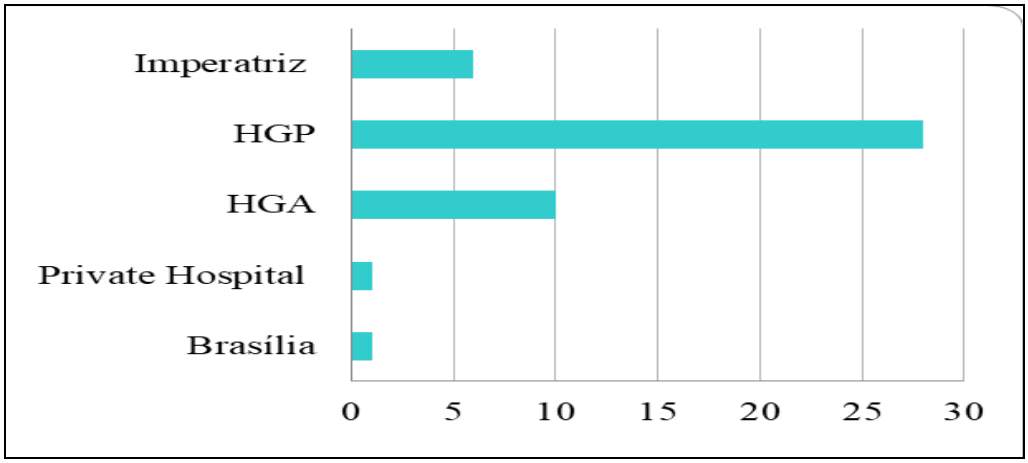


In addition, radiotherapy for low-risk CaP, hormone therapy and active surveillance can also be performed. One of the possible sequelae of radiotherapy is the actinic lesions (post-radiation

ISSN: 2319-0612
Accepted: 2021-04-04

inflammatory process) of pelvic organs such as the bladder and rectum, which can appear over the years of treatment [20, 21]. Active surveillance is a very selective practice that is indicated when the patient does not want any of the other treatments due to possible complications. It is carried out through exams and periodic consultations, usually every six months. This classification is based on digital rectal examination, PSA, imaging methods such as multiparametric resonance and mainly on prostate biopsy [22]. Prostate cancer with high metastatic potential should be treated more aggressively. Thus, different associated methods are used, such as radiotherapy, hormonal block and prostatectomy. The time of its introduction, duration of treatment and the type of block used can vary according to the case in question [23]. Regarding the treatment location, it was observed that the Hospital Geral Público de Palmas mainly developed the treatments (GRAPH 7). This is justified by the fact that most of the patients lived in Palmas, thus facilitating travel to treatment. However, there was also a considerable number of treatments in the cities of Araguaína in Tocantins and Imperatriz, in the state of Maranhão. In this research, treatments were observed in hospitals: Brasília, Private Hospital in Palmas, General of Araguaína Hospital (HGA), General Public Hospital of Palmas (HGP) and Imperatriz in the state of Maranhão.

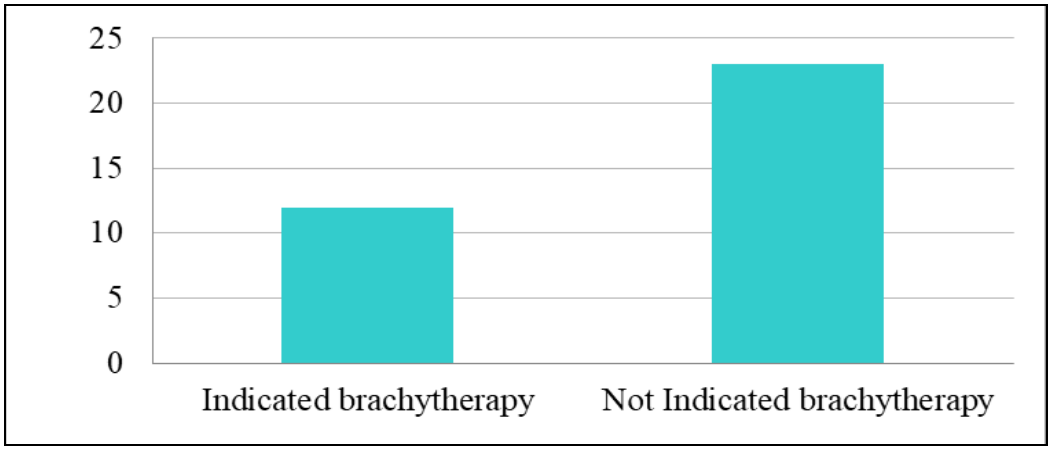
Graph 6: Place of treatment of the patients analyzed



The last analysis carried out refers to the aptitude for treatment by brachytherapy. It was found that most of the individuals, 23 of the 35 analyzed, were not fit for brachytherapy due to the high degree of disease staging (GRAPH 8).

ISSN: 2319-0612
Accepted: 2021-04-04

Graph 7: Patients analyzed fit and not fit for brachytherapy



Brachytherapy is only indicated for tumors confined to the gland (Stage I or II / FIGURE 2), with low PSA (usually less than 10 ng / mL) and less aggressive (with Gleason 6 and occasionally 7), especially for those who do not wish to undergo long-term external radiation therapy or to remove the prostate, prostatectomy [24]. Brachytherapy consists of a form of treatment that involves placing radioactive materials next to the tumor, therefore, a form of internal radiotherapy. The materials, also called radioactive Iodine-125 seeds, determine the release of high doses of radiation only in the vicinity of the implantation area, without reaching a large number of normal cells [25]. Brachytherapy is highly efficient and relatively convenient, since the patient is submitted to a single procedure. This lasts two to three hours, where the patient spends the night hospitalized and is discharged the next day. The procedure usually causes little discomfort and pain after implantation of iodine seeds [24].

4. CONCLUSION

The present study examined the population of patients with prostate cancer treated at the General Public Hospital of Palmas, in 2015, in the state of Tocantins. It was noted that most of the patients seen corresponded to the age of 70 to 79 years, making 45%, followed by patients aged between 60 and 69 years, with 33%. Most of the individuals served were from the state of Tocantins, but some lived in an adjacent city in the state of Pará. Regarding the time between

ISSN: 2319-0612
Accepted: 2021-04-04

diagnosis and the beginning of prostate cancer treatment, it was found that there was a predominance of 1 to 6 months, a time considered as good or reasonable, however, for 27.77% this time varied between 1 to 3 years. The data related to the Gleason score, there was a predominance of levels 6 and 7 indicating intermediate grade tumors, considering that most of the observed population was older. It was noted that the treatment used was carried out with different therapeutic approaches, since the sample was in several different stages of the disease. The treatment of hormonal block (BH) was the most used with 39%, then the association of BH and radiotherapy with 28%, and thirdly the association between BH, surgery (prostatectomy) and radiotherapy with 18% of the total of patients surveyed. It was concluded that the analyzed patients had a predominant staging of CaP II and III, thus most of the individuals, 23 of the 35 analyzed, were not able to undergo brachytherapy due to the high degree of disease staging.

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ISSN: 2319-0612
Accepted: 2021-04-04