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RESEARCH ARTICLE

Results of Curative Treatment of Prostate Cancer by External Radiotherapy in Lome

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Abstract

Introduction: External radiation therapy is one of the treatment options for localized prostate cancer. The aim of our study was to evaluate the results of this treatment in the curative management of prostate cancer patients in Togo.

Materials And Methods: This was a retrospective descriptive study of patients followed up in Togo who were treated with curative external radiotherapy for prostate cancer at the International Cancer Center in Lomé from 2021 to 2023. The parameters studied included age, initial total PSA, histological type, Gleason score, D'Amico staging, radiation characteristics, associated treatments, PSA progression, and side effects.

Results: A total of 61 cases were collected, representing a frequency of 20 cases per year. The average age of patients was 69.2 ± 2 years. Patients at high risk of AMICO accounted for 85.3% of cases. The initial PSA was 48.9 ± 9.3 ng/ml. All patients underwent prostate irradiation using the VMAT technique. Hormone therapy was combined with external radiotherapy in 95.1% of cases. Side effects were observed in 63.9% of patients during treatment, with a predominance of urinary disorders (44.3%) followed by digestive disorders (14.7%), with significant regression in the first few months. Biological recurrence was recorded in 6.5% of cases. Overall survival and recurrence-free survival at 1 year was 98.4%.

Conclusion: External radiation therapy, whether combined with hormone therapy or not, is one of the main curative options for prostate cancer. Individual screening and early consultation are essential to promote early diagnosis and, consequently, effective curative treatment.

Keywords: External Radiation Therapy, Curative Treatment, Prostate Cancer, Togo.

1. Introduction

Prostate cancer is a common condition, and the goal of treatment at the localized stage is primarily curative, aiming to achieve a cure. Several treatment options are available, including external beam radiation therapy [1]. Irradiation techniques have evolved considerably over the last decade with the introduction of intensity-modulated radiation therapy (IMRT), including the dynamic version known as volumetric modulated arc therapy (VMAT). These advances have made it possible to increase the doses delivered to the prostate while minimizing toxicity and improving efficacy. In Ghana, Asamoah et al. [2] reported that 57.6% of patients with localized disease had received curative radiotherapy, with an overall 5-year survival rate of 96%. In Togo, in 2016, 6.4% of patients with prostate cancer were eligible for

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curative treatment, in this case radical prostatectomy, which was the only option available [3]. In recent years, radiotherapy has been introduced into the therapeutic arsenal for prostate cancer in Togo, and more and more patients with localized prostate cancer are opting for this new technique, given the potential complications of surgery. The aim of this study was to determine the role of external radiotherapy in the curative management of patients with prostate cancer in Togo.

2. Methods

Our study was conducted within the radiotherapy department of the International Cancer Center of Lomé (CICL), as well as in the medical centers where the patients were referred from. This was a cross-sectional study with retrospective data collection, conducted from January 1, 2021, to December 31, 2023, a period of three years. It included all patients who received external radiation therapy for curative treatment of prostate cancer at the International Cancer Center of Lome. Patients diagnosed with prostate cancer who were eligible for curative treatment but who received treatment other than external radiation therapy were not included. Patients who received curative external radiation therapy for prostate cancer at the International Cancer Center in Lomé but who were not or poorly followed up or whose records were incomplete were excluded from our study. The parameters studied included: sociodemographic data, including age, occupation, place of residence, and medical history; diagnostic data, including initial total PSA, histological type, Gleason score, and D'Amico classification; therapeutic data: irradiated organs, total dose received and fractionation, spreading, and associated treatments; progressive data: PSA progression and side effects.

The data collected on the data collection form were analyzed using Epi Info software version 7.2.1.0.

3. Results

We collected 61 cases of prostate cancer in Togo treated with curative external radiation therapy. The number of cases increased over the years, as shown in Figure 1.

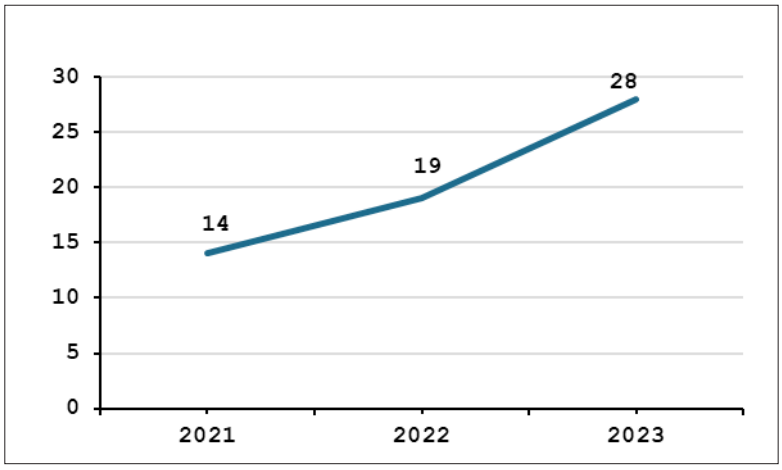

Figure 1. *Evolution of patients*

The average age of patients was 69.2 ± 2 years, with extremes of 46 and 93 years. Prostate cancer was discovered incidentally in 49 patients (80.3%). In 77 % of cases, this was due to a PSA test during a health check-up. Among symptomatic patients, lower urinary tract disorders predominated in 91.6 % of cases, as shown in Table I.

Table 1. *Distribution of patients according to the circumstances of discovery*

	n	%
Incidental finding	49	80.3
PSA * test	47	77
Open prostatectomy specimen	2	3.3
LUTS **	11	18.1
Obstructive disorders	9	14.8
Irritative disorders	2	3.3
Hematuria	1	1.6

***Prostatic Specific Antigen; **Low Urinary Tract Symptoms**

The mean initial PSA value was 48.9 ± 9.3 ng/ml, with extremes of 6.6 and 173 ng/ml. Fifty patients (81.9%) had a PSA ≥ 20 ng/ml, as shown in Table II.

Table 2. *Distribution of patients according to PSA level (ng/ml)*

	n	%
< 10	5	8.2
10 - 20	6	9.8
≥ 20	50	81.9

Forty-eight patients (78.2%) had undergone prostate MRI, and PIRADS 4 lesions were the most common, occurring in 75.6% of cases. All patients had prostate adenocarcinoma, and Gleason score 8 was predominant in 59% of cases, as shown in Table III.

Table 3. *Distribution of patients according to Gleason score*

	n	%
Gleason 6	11	18
Gleason 7	11	18
Gleason 8	36	59
Gleason 9	3	5
Total	61	100

Stage T2 was predominant, accounting for 56 % of cases, compared with 5 % for T1 (Table IV).

Table 4. *Distribution of patients according to TNM stadification*

	n	%
T1N0M0	3	5
T2N0M0	34	56
T3N0M0	24	39
Total	61	100

Fifty-two patients (85.3 %) were at high risk, compared with 3 cases (4.9 %) at low risk,

In terms of treatment, 32 patients (52.5 %) said they had chosen radiotherapy themselves after receiving an informed presentation of the available treatment options. In 93.7 % of cases, this choice was motivated by fear of surgery.

All patients benefited from VMAT technology. In addititional to the prostate, the seminal vesicles were irradiated in 95.1 % of cases, and the lymph nodes in 83.6 % of cases. The average duration of radiotherapy was 52.6 ±1.9 days, with extremes of 50 and 56 days.

Hormone therapy was combined with radiotherapy in 58 patients (95.1%), including 91.4% receiving long-term hormone therapy for 24 months and 8.6% receiving short-term hormone therapy for 6 months. LH-RH analogues were used in all cases. Forty-one patients (70.7%) had completed hormone therapy at the time of the study.

The mean follow-up duration was 24.4 ± 2.5 months, with extremes of 12 and 43 months.

Thirty-nine patients experienced side effects during radiotherapy (63.9 %). These were dominated by urinary disorders in 27 patients (44.3 % of cases) and digestive disorders in 9 patients (14.7 % of cases). Urinary urgency and dysuria were the most common urinary disorders, occurring in 32.8% and 29.5 % of cases, respectively. As for sexual disorders, erectile dysfunction accounted for 13.1 % of cases, as shown in Table V.

After radiotherapy sessions, 21 patients (34.4 %) experienced persistent side effects. The effects observed were urinary disorders, digestive disorders, erectile dysfunction, and hot flashes. Side effects were more common in the first six months, with regression beyond the 12th month after the end of radiotherapy (Table VI).

Oncologically, 31 patients (50.8 %) had reached their PSA nadir. The mean PSA nadir value in patients was 0.08 ± 0.05 ng/ml, with extremes ranging from 0 to 1.07 ng/ml. The PSA nadir was below 0.1 ng/ml in 83.9 % of cases. The time to PSA nadir ranged from 6 to 24 months, with a predominance of cases at 12 and 18 months, as shown in Table VII.

Table 5. *Distribution of patients according to side effects during the radiotherapy period*

	n	%
Urinary disorders	27	44.3
Urgency	20	32.8
Dysuria	18	29.5
Frequency	12	19.7
Nocturia	8	13.1
Digestive disorders	9	14.7
Proctitis	4	6.6
Constipation	3	4.9
Pelvic pain	3	4.9
Sexual disorders	8	13.1
Erectile dysfunction	8	13.1
Ejaculatory disorders	1	1.6
Asthenia	2	3.3

Table 6. *distribution of patients according to side effects*

	6 months n (%)	12 months n (%)	> 12 months n (%)
Urinary disorders	16 (26,2)	9 (14,7)	7 (11.5)
Erectile dysfunction	9 (14,7)	5 (8,2)	6 (9.8)
Digestive disorders	4 (6,6)	1 (1,6)	0 (0)

Table 7. *Distribution of patients according to time to PSA nadir (months)*

	n	%
6	2	6.5
12	11	35.5
18	16	51.5
24	2	6.5

PSA regression was observed in all patients after treatment. The extreme averages were 0.37 ng/ml and 9.73 ng/ml, corresponding to a maximum regression of 99.2 % compared to the initial PSA.

The one year recurrence-free survival rate was 98.4%. Four patients, or 6.5 % of cases, experienced biological recurrence, including three cases after 3 years of follow-up and one case at 12 months. They received hormone therapy. No follow-up treatment was performed.

4. Discussion

Our study looked at 61 patients with localized or locally advanced prostate cancer treated with curative external radiation therapy in Togo. The number of cases per year gradually increased from 14 cases in 2021 to 28 cases in 2023, for an average of 20 cases per year. The widespread use of prostate cancer screening promotes diagnosis at the localized stage, making it possible to offer this treatment option. The mean initial PSA value was 48.9 ± 9.3 ng/ml. Our results are comparable to those of Richaud et al. [4], who reported mean PSA levels of 52 ng/ml. These high PSA levels are due to delayed diagnosis in our context, where prostate cancer is most often discovered late, despite the progress made in recent decades, which allows for early diagnosis of localized forms. Thus, localized forms were more frequently high-risk, indicating radio-hormone therapy as first-line treatment, which was performed in 95.1% of patients. Our results are consistent with those of Taleb et al. [5], who reported 94.4% radio-hormone therapy as part of curative treatment for prostate cancer.

Prostate irradiation was combined with seminal vesicle irradiation in 95.1% of cases and lymph node irradiation in 83.6% of cases. In fact, the majority of patients were high-risk or even locally advanced. Although irradiation of the seminal vesicles remains standard for high-risk patients, irradiation of lymph nodes remains controversial: according to Chapet et al [6], irradiation of lymph node areas has no real benefit.

Hormone therapy was based on LH-RH agonists in all cases, due to the unavailability of LH-RH antagonists in our context. Radio-hormone therapy is now the standard combination treatment for high-risk prostate cancer. The EORTC (European Organization for Research and Treatment of Cancer) study showed the superiority of the combination of radiotherapy + prolonged hormone therapy with LH-RH agonists over radiotherapy alone in terms of recurrence-free survival (47.7% vs. 27.7%), overall survival (58.1% vs. 39.8%), and specific mortality (10.3% vs. 30.4%) [7].

However, radiotherapy is not without complications : 63.9% of patients experienced side effects such as urinary disorders in 44.3% of cases. This predominance of urinary disorders was also found by Quintin et al. [8] in 39.8% of cases during radiotherapy. Irradiation causes alteration of the urothelium, with disruption of its permeability, leading to edema and tissue inflammation. This eventually leads to fibrosis, which impairs organ function [9]. Thus, after radiation therapy, urinary disorders and erectile dysfunction were prevalent in 26.2% and 14.7% of cases, respectively, at 6 months. These irritative urinary disorders constitute radiation cystitis, which gradually regresses over time [10]. The possibility of damage to neighboring organs, particularly the digestive tract, explains the digestive side effects sometimes encountered. These side effects are increasingly minimized thanks to technological advances that offer greater precision in radiation, particularly VMAT.

In terms of cancer, 31 patients (50.8%) had reached their PSA nadir with a mean PSA nadir value of 0.08 ± 0.05 ng/ml. There was a predominance of 96.8% of cases with a PSA nadir below 1 ng/ml, which is comparable to the results of Taleb et al.[5], who reported a predominance of the same PSA nadir range in 98.9% of cases. This significant decrease in PSA in our study could be explained by the combination of hormone therapy, which, in these high-risk indications, allows for better control of the disease.

During follow-up, fours patients, or 6.5 % of cases, had biological recurrence. Based on PSA monitoring, recurrence rates vary between 25% and 32% according to Zouhair et al. [11]. This requires a specific PET scan to determine whether the recurrence is local or metastatic. As this test is not available in our setting, treatment consisted of hormone therapy.

5. Conclusion

The treatment of prostate cancer is becoming a major public health issue due to the aging population. Currently, external radiation therapy using the latest technology, VMAT, with or without hormone therapy, is one of the main curative options for this disease at the localized or locoregional stage. It offers carcinological results comparable to those of radical prostatectomy.

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