



## Hormone-Resistant Prostate Cancer: Sociodemographic, Clinical, Biochemical, Computed Tomography and Anatomico-Histopathological Profile at the Laquintinie Hospital in Douala

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### Abstract

Prostate cancer is a common malignant tumor which develops from prostate cells, it is likely to be controlled by medical castration using a hormone therapy. But, most often during the treatment, resistance to hormone therapy, also called resistance to medical castration can take place. This term is defined by a reappearance or non-regression of the disease after well-conducted hormone therapy. The objective of this work was to describe the social demographic, clinical, biological, computed tomography and anatomico-histopathological characteristics of patients with hormone-resistant prostate cancers at the Laquintinie Hospital in Douala, Cameroon. We carried out a descriptive cross-sectional study with retrospective collection within urology and oncology departments of the Laquintinie Hospital in Douala (LHD) over a period of 10 years from January 2009 to December 2019. Hormone-resistant prostate cancer accounted for 40% ± 8.48 of all identified prostate cancers. The average age of patients in our study was 63.44 years ± 9.27. The most represented age group was between 60 and 65 years old with a proportion of 40.4%. The most represented clinical signs were urinary signs (67.3%), lumbar pain (57.7%), and deterioration of general condition (42.31%). The average PSA level in our study was 195.1 ng/ml. The time to progression to resistance was in mean of 15.17 months ± 3.89. Hormone therapy was consisting essentially of analogues of LH-RH, anti-androgens and a second-line hormone therapy. Knowledge of the frequency of hormone therapy-resistant prostate cancer and its characteristics highlight the important of this public health problem in Cameroon.

**Keywords:** Cancer; Douala; Laquintinie Hospital; Hormone-resistant; Hormone therapy; Prostate; PSA

### Introduction

Prostate cancer is the first urological cancer. This cancer is ranked third among all types of cancer and the 8<sup>th</sup> leading cause of cancer death worldwide [1]. It can come in many forms; localized prostate cancer, locally extended prostate cancer, and metastatic cancer which alone represents 20% to 30% of the mode of discovery of this disease [2]. Its diagnosis is mainly based on digital rectal examination, Prostate-Specific Antigen (PSA) assay and prostate biopsies [3]. Data from CT scan, pelvic Magnetic Resonance Imaging (MRI) and bone scintigraphy represent the extension assessment of this condition. Even if optimal disease control is achieved with androgen deprivation therapy, most patients will eventually progress and develop resistance to this treatment, which is called hormone-resistant prostate cancer [3]. This cancer has become a real public health problem [4]. In 2018, the incidence of prostate cancer globally was 1,276,106, while its prevalence in Africa was 3.5% [1]. In 2010, prostate hormone-resistant prostate cancer among all prostate cancers, had a prevalence of 11.8% in the United States [5]; 11.2% in the UK [6]. In Cameroon, the Yaounde cancer registry estimates the age-adjusted incidence of cancers at 107 new cases per 100,000 inhabitants, of which 7.3% would represent prostate cancer [7].

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According to data from the literature, a multitude of studies have been carried out on hormone-resistant prostate cancer, particularly in India in 2016, Sureka et al. [8] demonstrated that the average time to onset of castration resistance is between 10 and 16 months, and depends on the extent of bone metastases. In Morocco in 2017, Fellah et al. [9] showed that the predictive factors of resistance to castration in Moroccan men were mainly advanced age  $\geq 65$  years, general deterioration condition, long time to reach Nadir of PSA  $\geq 6.6$  months. But to date, the resistance of prostate cancer to hormone therapy remains an unexplored area in Cameroon. Countless questions still arise about the characteristics surrounding this hormone resistance. An exploration of these aspects and the frequency of this health problem would make it possible to better appreciate its importance in Cameroon. The objective of this study was to describe the sociodemographic, clinical, biological, computed tomography and anatomo-histopathological characteristics of patients with hormone-resistant prostate cancer at the Laquintinie Hospital in Douala, Cameroon.

### Method

We carried out a descriptive cross-sectional study with a retrospective collection in the urology and oncology departments of the Laquintinie Hospital in Douala. Our study was conducted over a period of 10 years, from January 2009 to December 2019.

For data collection, we used a technical data sheet which was designed by the principal investigator. Any complete patient file with hormone-resistant prostate cancer treated in the urology and/or oncology departments of the Laquintinie Hospital between January 01<sup>st</sup> 2009 and December 31<sup>st</sup>, 2019, was included in our study. We used as data sources, complete files of hormone-resistant prostate cancers and hospitalization registers.

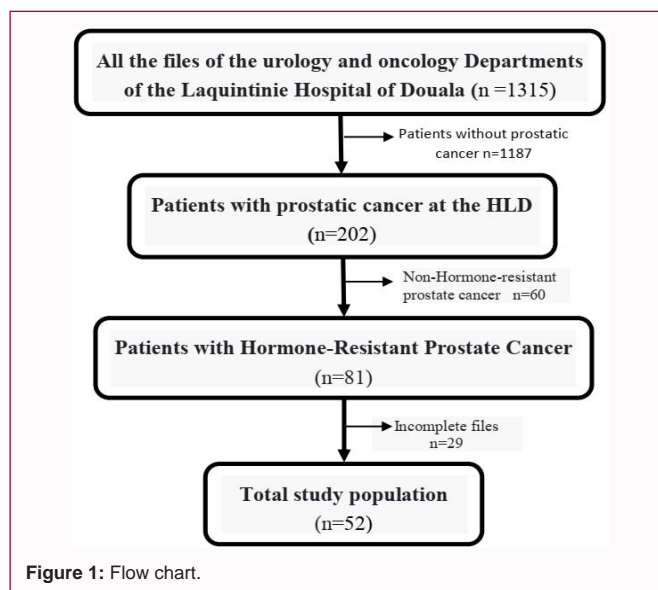
The data collected in the files selected were the sociodemographic characteristics, the history, the clinical and paraclinical characteristics and the therapeutic data, in particular the hormone therapy used. The data collected *via* the individual collection sheets were kept confidential by the principal investigator. The data were coded and entered using the EPI Infos version 7.1 software. Then, analyzed with SPSS software version 20 (Statistical Package for the Social Sciences). Tables and graphs were formatted in Microsoft Office Excel 2013. The description of hormone-resistant prostate cancer was made using proportions and averages. Confidence intervals were calculated whenever necessary.

### Results

According to Figure 1, we consulted a total of 1,315 files in the urology and oncology departments of the Laquintinie Hospital of Douala, in which we identified 128 cases of prostate cancer treated with hormone therapy during our study period, including 52 cases of hormone-resistant prostate cancer, for a frequency of  $40\% \pm 8.48$ .

The average age of patients with hormone-resistant prostate cancer was  $63.44 \pm 9.27$  years. According to Table 1, patients aged 60 to 65 were the most represented (40.38%), followed by those aged 65 to 70 (28.8%). Pensioners were the most represented (90.38%), followed by those working in the public sector (5.77%) and the private sector (3.85%).

The Table 2 reveals that 35 patients (67.31%) presented urinary signs, 30 (57.70%) presented lumbar pain, and 22 (42.31%) presented a general deterioration. The urinary symptomatology was essentially



**Table 1:** Distribution of patients according to their sociodemographic characteristics.

Characteristics	Workforce (n)	Frequency (%)
<b>Age (year)</b>		
[55-60]	5	9.61
[60-65]	21	40.38
[65-70]	15	28.85
$\geq 70$	11	21.15
<b>Activity area</b>		
Retirement	47	90.38
Public sector	3	5.77
Private sector	2	3.85

**Table 2:** Distribution of patients with hormone-resistant prostate cancer according to their history and clinical characteristics.

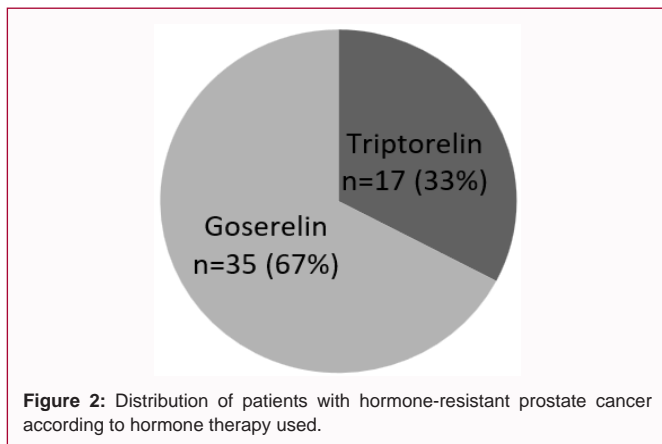
Characteristics	Workforce (n)	Frequency (%)
<b>Initial clinical signs</b>		
Urinary signs	35	67.31
Lower back pain	30	57.7
General deterioration	22	42.31
<b>Co-morbidity</b>		
Diabetes	13	25
hypertension	3	5.77
No declared co-morbidity	36	62.23
<b>Digital rectal examination</b>		
Normal	5	9.62
Pathologic	47	90.39

made up of urine retention, pollakiuria and hematuria, accounting for 25%, 23.1% and 19.2% respectively. Two comorbidities were found in some patients: Type 2 diabetes (25%) and hypertension (5.77%). On rectal examination, 47 patients (90.39%) presented with a suspicious prostate.

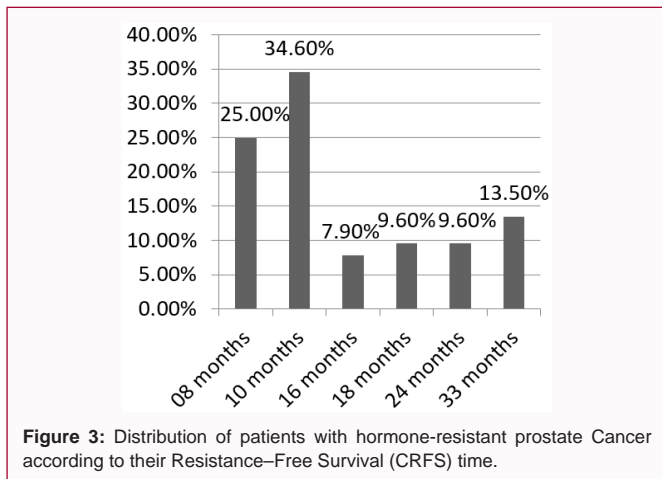
According to Table 3, the most represented metastases were bone metastases (80.77%), followed by pulmonary metastases (11.54%).

**Table 3:** Distribution of patients with hormone-resistant prostate cancer according to their biochemical, CT scan and biopsy features.

Characteristics	N (%) or Mean
<b>CT scan</b>	
Bone metastases	42 (80.77%)
Lymph node metastases	6 (11.54%)
Liver metastases	2 (3.85%)
Pleuropulmonary metastases	2 (3.85%)
<b>Histological type</b>	
Adenocarcinoma	52 (100%)
Other	0
<b>Rate of PSA (ng/ml)</b>	
Mean	195.1 ng/ml
Minimum	20 ng/ml
Maximum	535 ng/ml



**Figure 2:** Distribution of patients with hormone-resistant prostate cancer according to hormone therapy used.

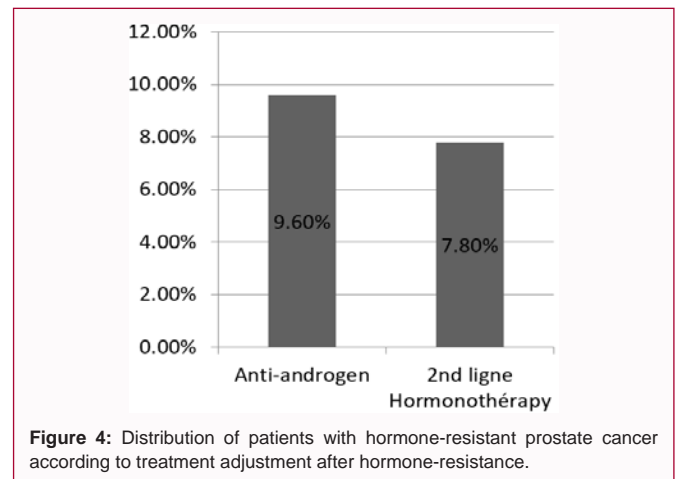


**Figure 3:** Distribution of patients with hormone-resistant prostate Cancer according to their Resistance-Free Survival (CRFS) time.

The histological type represented was exclusively an adenocarcinoma (100%). The minimum PSA value in our series is 20 ng/ml, the maximum being 535 ng/ml and an average rate of 195.1 ng/ml.

According to Figure 2, hormone therapy consisted of an LH/RH analogue. Mainly by Goserelin (67%).

The average survival time without resistance to castration was 15.17 months  $\pm$  3.89 with a minimum of 8 months and a maximum of 33 months. According to Figure 3, 34.6% of patients had a survival



**Figure 4:** Distribution of patients with hormone-resistant prostate cancer according to treatment adjustment after hormone-resistance.

time of 10 months, 25% a survival time of 8 months. The Figure 4 shows that an additive anti-androgen was observed in 9.6% of cases (cyproterone acetate). Additive second-line hormone therapy was observed in 7.8% of cases (abiraterone acetate).

### Discussion

The objective of our study was to define the epidemiological, clinical, paraclinical and therapeutic aspects of hormone-resistant prostate cancers at the Laquintinie Hospital of Douala. Our series reported 52 cases of hormone-resistant prostate cancer. The average age of patients with hormone-resistant prostate cancer was 63.44  $\pm$  9.27 years. Our results are therefore similar to those of Sureka et al. [8] in India in 2016 for whom the average age was 61.5  $\pm$  12.45 years. Saad et al. [10] in Canada in 2016 noted an average age of 65 while Mangir et al. [11] in Turkey in 2014 found that the average age of the patients was 70.0  $\pm$  8.8 years. In Morocco in 2017, Fellah et al. [9] found the average age of patients to be 70.5  $\pm$  7.4 years. In our series, 50% of patients were over 65 years old. The disease was more common in the age group from 60 to 65 years old with a percentage of 40.38%. Saad et al. [10] observed that 55.7% were over 65 years old. Similarly, Sureka et al. [8] found that 56% of patients were over 65 years old. Our study found that 25% of patients had diabetes and 5.77% had high blood pressure. In the study by Vegas et al. [12] in 2012 in France, the frequencies were higher for cardiovascular history (43%), while diabetes was found in 16% of cases.

Our study found a frequency of 40%  $\pm$  8.48 of hormone-resistant prostate cancers among all prostate cancers identified in the urology and oncology departments of the Laquintinie Hospital in Douala. This result is higher than those of Alemayehu et al. [5] (11.8%), and Morgan et al. [6] (11.2%). This would be explained by the early diagnosis and treatment in these developed countries. In a study done in France, Rigaud et al. [13] found that 66% of patients had showed urinary signs (dysuria) at the onset of the disease. Only 27.6% had bone pain in their study while in our series 57.70% of patients had bone pain. Our study revealed that, of the 52 cases, the digital rectal examination concluded that the prostate was suspicious of malignancy in 75% of cases. These results are slightly higher than those of Lin et al. [14] in 2015 in Shanghai which found 73.1% of cases with pathological touch; while Fellah et al. had found even higher results, at 80%.

The mean PSA level in our study was 195.1 ng/ml. This result close to that of Fellah and al amounting to 213.9 ng/ml.

In our study, the time progression to resistance was an average of

16.79 months. This result is very close to that of Fellah et al. [9] which presents an average of 16.25 months. Also in the same direction, Sureka et al. [8] showed that 69% of patients with prostate cancer resistant to castration exceeded this threshold with a slightly longer delay of 17.7 months.

In our series, bone metastases were more frequent than visceral and lymph node metastases. This result agrees with those found by Fellah et al., Pouessel et al. [15], Saad et al., and Verzoni et al. [16], who respectively found 85%, 92%, 88 and 88% bone metastases.

Biopsy results showed adenocarcinoma in all 52 patients, i.e., 100% of cases with hormone-resistant prostate cancer. This result is explained by the fact that adenocarcinoma is by far the histological type the most common in prostate cancer.

The hormone therapy used in our study consisted essentially of LH-RH analogues in 52 patients, i.e., 100% of cases. This modality was also dominant in the series of Fellah et al. [9] (92.5%), also Saad et al. [10] (91.8%).

## Conclusion

At the end of our study, which the aim was to describe the sociodemographic, clinical, biological, computed tomography and anatomo-histopathological characteristics of cancers of the resistant prostate cancer at Laquintinie Hospital in Douala, Cameroon, we can remember that hormone-resistant prostate cancer accounted for 40% of all prostate cancers recorded in these departments between 2009 and 2019. The average age in our study was less than 65 years old. The most represented age group was between 60 and 65 years old. Urinary signs and lumbar pain were the most represented. The mean PSA level in our study was 195.1 ng/ml. The mean survival time without resistance to castration is 15.17 months  $\pm$  3.89. In addition, 34.6% of patients had a survival time of 10 months, 25% a survival time of 8 months. Bone metastases were the most encountered compared to visceral and lymph node metastases. Hormone therapy consisted exclusively of LH-RH analogues, then after resistance, of an additive anti-androgen and in some cases of second-line additive hormone therapy. All these information highlight the important of this public health problem in Cameroon and suggest close collaboration between Urologist surgeon and Oncologist for better prognosis of prostate cancer in Cameroon.

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