



Clinical, biological, morphological and histological profile of prostate cancer at the Central Hospital in Yaounde

Profil clinique, biologique, morphologique et histologique du cancer de la prostate à l'Hôpital Central de Yaoundé

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Original Article

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ABSTRACT

Introduction: Prostate cancer is a public health problem. In sub-Saharan Africa in general, prostate cancer is diagnosed late. We therefore set out to study the clinical, biological, morphological and histological profile of patients diagnosed with prostate cancer.

Methodology: We conducted a cross-sectional study over a period of 10 years in the Urology Department of the Yaoundé Central Hospital (YCH). We included all patients with a histologically confirmed diagnosis of prostate cancer.

Results: The median age of our patients was 73 years. The most common reason for consultation was acute retention of urine (78.5%). The digital rectal examination was suspicious in 71 patients (54.6%). Haemoglobin levels were below 12 in 76.8% of patients, and PSA levels were above 100 in 70.7%. Urine microscopy and culture found a germ in 96.6% of patients. On TRUS, the prostate had at least one nodule in 70% of cases. Finger-guided prostate biopsy was the most commonly used sampling technique (67.7%); the ISUP prognostic group with the highest representation was group 3 (54.6%); adenocarcinoma was the only histological type found in all cases. Metastases were found in 92.3% of patients. Bone metastases were the most common on CT scan (74.2%). In terms of TNM classification, patients were more likely to be classified as T4N1M1 (64.6%).

Conclusion: Prostate cancer at the Yaounde Central Hospital is synchronous and therefore advanced. There is a need to set up screening policy and a national registry.

RESUME

Introduction : Le cancer de la prostate est un problème de santé publique. Le but de l'étude était d'étudier le profil clinique, biologique, morphologique et histologique des patients diagnostiqués avec un cancer de la prostate.

Méthodologie : Il s'agissait d'une étude transversale sur une période de 10 ans dans le service d'urologie de l'hôpital central de Yaoundé (HCY). Etaient inclus tous les patients ayant un diagnostic de cancer de la prostate confirmé histologiquement.

Résultats : L'âge médian de nos patients était de 73 ans. Le principal motif de consultation était la rétention aiguë d'urine (78,5 %). Le toucher rectal était suspect chez 71 patients (54,6%). Le taux de PSA était supérieur à 100 (70,7 %). La culture de l'urine retrouvait un germe (96,6 %). La biopsie prostatique guidée par le doigt était la technique d'échantillonnage la plus utilisée (67,7 %). Le groupe pronostique de l'ISUP le plus représenté était le groupe 3 (54,6 %). L'adénocarcinome était le seul type histologique retrouvé. Des métastases ont été trouvées chez 92,3 % des patients. Les métastases osseuses étaient les plus fréquentes au scanner (74,2 %). Les patients étaient classés T4N1M1 (64,6 %).

Conclusion : Le cancer de la prostate à l'hôpital central de Yaoundé est synchronique et donc avancé. Il est nécessaire de mettre en place une politique de dépistage et un registre national.

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Introduction

Prostate cancer is the second most common cancer in men after bronchopulmonary cancers [1]. It is currently a public health problem, with a frequency that varies from country to country [2]. It affects people aged over 50 [3]. The causes remain unknown, but gender, age, ethnic origin, family history of Prostate cancer and breast cancer, genetic factors and testosterone metabolism are established risk factors. The incidence of Prostate cancer varies widely from one continent to another. The incidence rate of PCa varies more than 25-fold worldwide; generally it is higher in Western countries and lower in Asian countries. [4 Northern Europe had the highest estimated incidence rate (82.8 per 100 000 men) and Southern Africa had the highest mortality rate (29.7 per 100 000 men). South-Central Asia had the lowest rates for both incidence (6.4 per 100 000 men) and mortality (3.1 per 100 000 men). At the country level, the highest incidence rates were found in Australia, New Zealand, the USA, Brazil, and several countries in the Caribbean and Northern Europe. By contrast, mortality rates were highest in many sub-Saharan African and Caribbean countries, such as Barbados, Jamaica, and Chad, and were lowest across Asia [5]. In Africa, the highest rates were reported in East Africa with figures of 10.7–38.1 per 100,000 people and the lowest rates were reported in West African countries, at 4.7–19.8 per 100,000 people. [6]. The prevalence of prostate cancer was estimated, In Cameroon, at 7.13% [7]. A study by Sow et al in 2006 found that benign prostatic hyperplasia was the most common tumour pathology [8]. Furthermore, Angwafo et al. reported that prostate cancer is common among black people in Cameroon and its incidence is increasing every year [9]. Prostate cancer is becoming more and more an issue of public concern in Africa due to the fact that the majority of new diagnoses are advanced/metastatic cancers, with poor prognosis and low chances of long-term survival [6]. With this in mind, we proposed to conduct a study of the clinical, biological, morphological and histological profile of prostate cancer at the Yaoundé Central Hospital.

Methodology:

We conducted a descriptive cross-sectional study with retrospective data collection. Our study lasted 7 months from 1 March 2023 to 15 September 2023 and was conducted over a 10-year period from 1 January 2013 to 15 September 2023. Our study population consisted of all patients hospitalized in the Urology and Andrology Department of the Yaoundé Central Hospital (YCH) with a histological diagnosis of prostate cancer. All patients with a histologically confirmed diagnosis of prostate cancer who had received treatment for prostate cancer at YCH were systematically included in our study. All files deemed incomplete were not included in our study.

Several variables were studied: socio-demographic parameters (age of detection of the disease, history, general condition), clinical, biological and histological samples: symptoms; lesions observed and Gleason score and ISUP (International Society of Urological Pathology) grade and TNM stage,

Information was collected using a pre-established questionnaire and entered into the EPI INFO 3.5.1 epidemiology software. Continuous data were analysed using SPSS (Statistical Package of the Social Science) software, Microsoft Excel and Word application software for text processing. The results of our study were described in the form of categorical variables, percentages, proportions and/or frequencies.

We conducted our study in strict compliance with the fundamental principles of medical research. We obtained ethical clearance to carry out this work. Anuria was defined as the absence of urine output for 24 hours, weight loss as a weight loss of more than 10%, asthenia was defined according to the WHO ECOG-PS, post-micturition residual was considered significant when it was greater than 100 ml and the threshold value for CKD was 105 mmol/l.

Results

A total of 1450 patient files were collected in the urology department of Yaoundé Central Hospital. Of these, 130 had a histologically proven diagnosis of prostate cancer (figure 1).

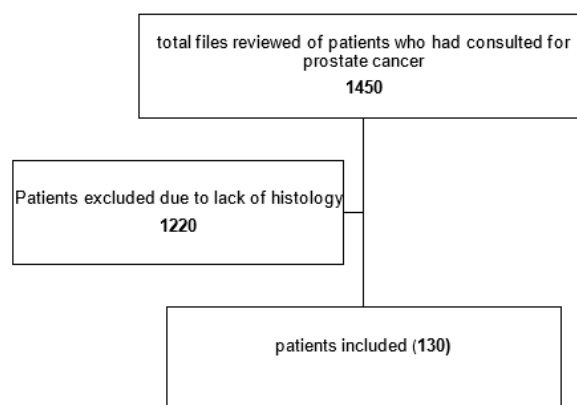


Figure 1: Flow chart

The median age of the study population was 73 years [65–78], with extremes between 48 and 103 years. The most common age group was 70 to 79 years (43.8%), followed by 60 to 69 years (25.4%). Patients under 50 made up 0.8% and those over 80 20.8% (Table 1).

Concerning medical history, hypertension (60%) was the most common comorbidity, followed by sexually transmitted infections (39.2%), diabetes (28.5%) and obesity (22.3%). As for surgical history, hernia repair was the most common (41.9%). 10% of patients were aware of a positive family cancer history, including

prostate cancer (6.1%), breast cancer (0.8%) and other cancers (3.1%). The most common clinical sign at the time of hospital admission was acute urine retention (78.5%), followed by poor performance status with asthenia (74.6%) and bone pain (67.7%).

Table I: Sociodemographic characteristics of study population

Variables	Groups	Number (N)	Percentage (%)
Age (years)	[40 - 49]	1	0,8
	[50 - 59]	12	9,2
	[60 - 69]	33	25,4
	[70 - 79]	57	43,8
	>80	27	20,8
Total		130	100

Table II: Clinical characteristics of study population based on circumstance of discovery

Variables	Groups	Quantity N = 130	Percentage (%)
AUR	Yes	102	78,5
	No	28	21,5
Bone pain	Yes	88	67,7
	No	42	32,3
Anuria	Yes	28	21,5
	No	102	78,5
Anémia	Yes	21	16,2
	No	109	83,8
CKD	Yes	31	23,9
	No	99	76,1
Asthenia	Yes	97	74,6
	No	33	25,4
Anorexia	Yes	15	11,5
	No	115	88,5
Weight loss	Yes	13	10,0
	No	117	90,0

AUR: acute urinary retention

CKD: Chronic Kidney Disease

The majority of patients prior to hospital admission presented with pollakiuria (43.1%) and dysuria (40%). The digital rectal examination (DRE) was suspicious in 71 patients (54.6%). On ultrasound, the median prostate volume was 56 [35-76] ml, with extremes ranging from 20 to 282 ml. Seventy-one patients (54.6%) had a prostate volume of between 40 and 80 ml. Ureterohydronephrosis was found in 58 patients (44.6%). Post-void residual was found in 103 patients. The median volume was 78.12ml, with an interquartile range of 45 to 191ml and extremes of 0 to 485ml. Patients with a post-void residual of more than 100ml were the most numerous (39.8%). Patients with at least one nodule on ultrasound accounted for 70% of patients.

The most commonly performed morphological examinations were thoraco-abdomino-pelvic CT (TAP scan) in 123 patients (94.6%), followed by prostate MRI in 29 patients (22.3%). All patients who underwent prostate MRI underwent a thoraco-abdomino-pelvic CT scan as assessment for

metastasis after confirmation of prostate cancer diagnosis.

The median total PSA level was 100ng/ml with an interquartile range of 56 to 259.35 and extremes of 2 to 22,000ng/ml. The most representative ranges were 51 to 100ng/ml and 101 to 1000ng/ml. The median haemoglobin level was 9.77 g/dl [7,75-11,55] with a range of 3.33 to 16.8 g/dl. The median urea level was 0.96 mmol/l, with an interquartile range of 0.37 to 3.77 mmol/l and extremes of 0.12 to 34 mmol/l. The median creatinine level was 14.40 mmol/l with an interquartile range of 11.76 and 33.75 and extremes of between and 238 mmol/l. There were 59 patients with elevated creatinine levels, 50.4% of them. The median testosterone level was 15 nmol/ml with an interquartile range of 9 and 32 nmol/ml and extremes between 0.23 nmol/l and 67 nmol/l. Urine microscopy and culture was performed in 117 patients and was abnormal in 96.6%. The germ most frequently found was *Escherichia coli* (70.7%) followed by *Klebsiella p* (14.7%).

Table III: biologic characteristics

Variables	Group	Quantity	Percentage (%)
Total PSA (ng/ml)	N = 130		
	< 4 (normal)	0	0
	[4 - 10]	2	1,5
	[10 - 50]	17	13,1
	[51 - 100]	50	38,5
	[101 - 1000]	46	35,4
Hémoglobine level (g/dl)	n=112		
	> 1000	15	11,5
	< 6,0	7	6,3
	[6,0 –7,9]	22	19,6
	[8,0–11,9]	57	50,9
Urea (mmol/L)	n=115		
	≥ 12	26	23,2
	< 2,5	76	66,1
	[2,5 - 8,3] (normal)	24	20,9
Creatinine (mmol/L)	n=117		
	> 8,3 (high)	15	13,0
	< 7	3	2,6
	[7 - 14] (normal)	55	47,0
Serum Testosterone (nmol /ml)	n=108		
	> 14 (high)	59	50,4
	< 8,2 (low)	19	17,6
	[8,2–34,6] (normal)	63	58,3
	> 34,6 (high)	26	24,1

Finger-guided prostate biopsy was the most commonly used sampling technique (67.7%), followed by TURP chips (20.8%). The histological

type found was prostatic adenocarcinoma (100%).

Bone metastasis was the most represented, 74,2% followed by pulmonary metastasis, 21,6% (Table IV).

Table IV: distribution according to métastases sites

Variables	Groups	Quantity (N)	Percentage (%)
Sites de métastases (n=120)	Bone Metastasis	89	74,2
	Pulmonary Metastasis	26	21,6
	Other sites	5	4,2
Total		120	100

The ISUP 3 group was the most represented at 54.6% and in the TNM classification stage T4N1M1 was the most represented at 64.6% followed by stage T3N1M1 (17.7%) and stage T3N0M1 (8.5%).

Table V: distribution according to TNM and Gleason classifications

Variables	Groups	Quantity (N)	Percentage (%)
Classification TNM	T1N0M0	7	5,4
	T2N0M0	3	2,3
	T3N0M0	2	1,5
	T3N0M1	11	8,5
	T3N1M1	23	17,7
	T4N0M1	0	0
	T4N1M1	84	64,6
Groupe pronostic ISUP	Group1 Gleason 6 (3+3)	12	9,2
	Group 2 Gleason 7 (3+4)	9	6,9
	Group 3 Gleason 7 (4+3)	71	54,6
	Group 4 Gleason 8 (4+4, 5+3,5+3)	27	20,8
	Group 5 Gleason 9 ou 10	11	8,5

Surgical castration (orchidectomy) was the most common treatment (84.6%), followed by radical prostatectomy (9.2%) and hormone therapy (6.2%). All patients in the metastatic stage were on complete androgen blockade, i.e. 93.2% of patients who had undergone orchidectomy and anti-androgen therapy and 6.8% of patients on LHRH analogues and anti-androgen therapy.

Discussion

The mean age of the study population was 72.12 ± 9.12 years, with a minimum age of 48 years and a maximum age of 103 years. The most common age group was 70 to 79 years (43.8%), followed by 60 to 69 years (25.4%). These data are in line with those reported by Mbamba et al. in Mali and Kouka et al. in Senegal, who reported 71.15 ± 9.311 and 72.7 years

respectively [11,12]. In his study, Kouka et al. found that the most representative age group was between 70 and 80 years [12], as did Gueye et al. [13]. This result is like ours. These results show that the age at which prostate cancer is diagnosed is the same in sub-Saharan Africa, and this bears witness to the similar difficulties that sub-Saharan African countries may be experiencing. This may be more striking when we look at the series by Terrier et al. in France, who found a mean age of 58 ± 7 years [14]. This difference in age can be explained by two factors: the awareness campaigns pushed forth by the French health system and the overall level of education in their country and patients under 50 years of age accounted for 0.8% and those over 70 for 64.6%. These figures are similar to those of Kouka et al. [12]. Furthermore, most of these patients are retired and sometimes need external support to carry out examinations and benefit from treatment, which is costly both financially and psychologically.

In our series, acute urinary retention was the main presenting scenario accounting for 78.5% of cases, followed by altered general state notably anaemia in 74.6% of cases, and bone pain (67.7% of cases). Our circumstances of discovery are similar to those of Tengué et al., in Togo, and Ndoeye et al. in Senegal, who found LUTS to be the leading cause in 79.2% and 72% of cases respectively [15,16]. Regarding the impairment in general state and bone pain, our results are similar to those of Ndoeye et al. in Senegal, who found AEG (44%) to be more frequent than bone pain (31.37%) [16]. However, our results differ from those of Tengué et al., who found that prostate cancer was more frequently discovered in patients with bone pain (67.2%) and those with general health impairment (20.4%) [15]. Whatever the circumstances in which prostate cancer is diagnosed in sub-Saharan Africa, it should be considered in the presence of acute urinary retention deterioration in general state and bone pain in an older patient. These signs are also suggestive of advanced prostate cancer.

In contrast, in Rigaud's series in France, the mode of onset was AEG in 5.3% of cases, bone pain in 22.9% and micturition problems aggravated by dysuria in 50.6% of cases [17]. A comparison of the results of our study with those of Rigaud, where prostate cancer is discovered very early (metachronous prostate cancer) [17] reveals some discrepancies. These This is illustrated by the high recurrence of bone pain, altered general state and acute urinary retention (AUR), which would indicate a more aggressive cancer at the time of discovery. This supports Jalloh et al. statement that many men in sub-Saharan Africa (SSA) are diagnosed at advanced stages of the disease [18].

A family history of prostate cancer was known in 6.1% of patients. This figure is similar to that of Kouka et

al. and is not far from Kamadjou et al. who found a frequency of 6.91% and 4.93% respectively [12,19]. The low rate of knowledge of the history of cancer is due to the fact that modern medicine is gradually taking over from traditional medicine, which was practiced more by our fathers. This explanation makes sense when we look at the figures from European countries where modern medicine has been practiced for ages.

Our patients have a history of hypertension, sexually transmitted infections (STIs), abdominal obesity and diabetes (60%, 39.2%, 28.5% and 22.3% respectively). Numerous studies have suggested a link between elements of metabolic syndrome and prostate cancer, such as the study by Anwar E Ahmed et al, who shown that when both obesity measures were combined, the general and abdominal obesity category was associated with a significant increase in the odds of prostate cancer in Black men [20]. Laukkanen et al. found that obese or overweight men had a higher risk of developing prostate cancer [21]. Men over 45 years of age with systolic blood pressure (upper level) greater than 150 mmHg had a 35% higher risk of prostate cancer than men with normal blood pressure. Patients with prostate cancer and hypertension had a 49% higher overall mortality rate. This indicates a link between prostate cancer and hypertension. It has been suggested that type 2 diabetes is associated with a lower risk of prostate cancer [22] however in a recent systematic review there was no association with prostate cancer risk [23]. With regard to the surgical history in our series, herniorrhaphy dominated with a frequency of (29.4%). This result is higher than that of Dolo et al. who reported a frequency of 10.08% and is similar to that of Noutacdie who reported a frequency of 20.57% [24]. The predominance of herniorrhaphies can be due to the frequency of the tertiary sector which is high. This sector require physical effort.

The digital rectal examination was found to be suspicious in 71 patients (54.6%). This result is similar to that of Kouka et al. (55.4%) [12]. According to the literature, Digital Rectal Exam (DRE) has a sensitivity of over 50% [3,15,16]. This may be due to the advanced stage of the disease (Halidou, Ondziel) [3,24].

In our series, the median total PSA level was 100ng/ml with an interquartile range of 56 - 259.35. This result is like that of Tengue et al. (123.5ng/ml) and Sine et al. (97.7ng/ml) [15,25]. Most patients (46.9%) had a PSA greater than 100 ng/ml. This is in line with African studies [3,11,12,25] Total PSA is correlated with the risk of metastasis, particularly above 20 ng/ml [26]. The PSA range was 2 and 22,000 ng/ml. This result is similar to the study conducted in Senegal by Ndoeye et al., which found a mean PSA level ranging from 5.88 ng/ml to 21,660 ng/ml [16]. Prostate cancer in sub-Saharan Africa is consistent with advanced

prostate cancer.

The mean haemoglobin level was 9.85 ± 2.83 g/dl with extremes between 3.33 and 16.80 g/dl. The most common haemoglobin range was 8 to 11.9 mg/dl, although 76.8% of patients had a haemoglobin level of less than 12 mg/dl. This finding may explain why asthenia is the second most common clinical presentation for the diagnosis of prostate cancer. The median creatinine level was 14.40 mmol/l, with an interquartile range between 11.76 and 33.75 mmol/l and extremes between 3.55 and 238 mmol/l. There were 59 patients with elevated creatinine levels, 50.4% of them. This finding could be the subject of work on the risk factors for death in patients with prostate cancer. Urine microscopy and culture was performed in 117 patients and was abnormal in 96.6%. The germ most frequently found was *Escherichia coli* (70.7%), followed by *Klebsiella p* (14.7%). This finding is consistent with significant bladder outlet obstruction and a cause of hospital admission in relation to End Stage Renal Disease (ESRD). The most used sampling technique in our series was digitally guided biopsies (67.7%). This rate is like that of Diakité et al., who found a rate of 71.6% [27]. For Halidou et al., biopsy was the most representative type of sample (83.78%). This demonstrates the difficulties we face in sub-Saharan Africa [3]. This may be due to difficulties with the technical platform, the cost of the procedure or the long-standing practice of biopsy without ultrasound and possibly the data from the digital rectal examination [28].

Ultrasound is not specific and is not sensitive for the detection of prostate cancer. It has no place in the detection or disease extension assessment [29]. It is used for post-micturition assessment, prostate volume assessment and to guide biopsies [29]. Ureterohydronephrosis was found in 58 patients (44.6%). Post-void residual was found in 103 patients. Patients with a post-micturition residue of more than 100ml were the most numerous (39.8%). These results should draw our attention to the presence of a significant post-void residual in patients with advanced prostate cancer.

The most frequently performed morphological examinations were thoraco-abdomino-pelvic CT (TAP scan) in 123 patients (94.6%), followed by prostate MRI in 29 patients (22.3%). PET (Positron Emission Tomography) scan is not available in our country. All patients who underwent prostate MRI had a TAP CT scan (thoracic-abdominal-pelvic scanner) as assessment for metastasis after confirmation of the prostate cancer diagnosis. In the case of locally advanced disease or lymph node or bone metastases, TAP CT scan remains useful for detecting visceral metastases [30]. Kouka et al. found that CT scan was the most frequently performed examination after ultrasound [12]. Multiparametric MRI makes it

possible to measure prostate volume, to describe each suspicious area (or target) identified and analysed using the available version of the Prostate Imaging Reporting and Data System (PI-RADS) and for locoregional extension assessment [31]. MRI was not performed in the Kouka study because of a lack of technical facilities in Thiès [12]. In the case of advanced disease or lymph node or bone metastases, TAP CT scan remains useful.

In our series, 56.5% of patients presented with an International Society of Urological Pathology (ISUP) 3 Gleason score 7 (4+3). This result is like that of Mbamba et al., who found 51.5% of ISUP 3 (4+3) patients [11]. African studies, such as those by Halidou and Ondziel, show that the vast majority of patients have ISUP grade 4 (43.24%), ISUP grade 5 (37.29%) and between 7 and 8 [3,24]. Jalloh et al. found that the distribution of aggressive prostate cancer in the Gleason 4-5 group was similar between West Africa (39.9%) and South Africa (38.1%) [30]. In our series, the rate was 29.3%. Studies such as those by Kamadjou et al., on the other hand, reveal less aggressive cancers, with the majority having an ISUP score of 1. This may be explained by the fact that Kamadjou et al. had no metastatic stage [19].

The histological type was adenocarcinoma. This finding is consistent with the African literature [3,12,13,19,24,27,31,32]. Metastatic cancer at the time of diagnosis (synchomatic cancer) was found in 92.3% of our patients. This result is higher than that of Halidou et al. (71.37%) and close to that of Sine et al. (83.3%) [3,25]. This difference can be explained by the difference in the number of patients. B Sine worked on patients with a Gleason score greater than or equal to 8 [25]. Our results, compared with the literature, show that prostate cancers are discovered at the metastatic stage (synchomatic cancer).

We found bone metastases in 74.2% of cases and pulmonary metastases in 21.6%. This result is similar to that of Halidou et al. (77.35%) [3]. The African literature is in favor of a predominance of bone metastases [15,24,31,33].

In our series, 90.8% of patients had metastatic PCa. This result is characteristic of the late diagnosis of the patients and of the fact that the patients presented a synchomatic cancer. This result is like that of Nzamba et al. [10] who found 95% of patients with locally advanced or metastatic prostate cancer, but differs from that of Rigaud et al., in France, who found 8.7% of patients in his population at stage T3-T4 and 65.3% at stage T1-T2 [17]. These results show that prostate cancer is diagnosed at an advanced stage in Africa and Cameroon in particular, unlike in European countries such as France. This suggests the need for a screening protocol for early diagnosis of prostate cancer adapted to our context.

The therapeutic strategy is to improve patient

comfort and increase life expectancy. The methods used are: Prostatectomy, external radiotherapy, hormone therapy and chemotherapy. The choice of each method depends on the patient's age, general condition, the stage of the cancer at the time of discovery and how far it has progressed.

The most common therapeutic measures are surgical castration (orchidectomy), radical prostatectomy and hormone therapy. All patients in the metastatic stage were on complete androgen blockade (93.2% of patients who had undergone orchiectomy and were anti-androgenic and 6.8% of patients on LHRH analogues and anti-androgens). These data are not consistent with those of Nzamba et al., in Côte d'Ivoire, who found hormone therapy and antiandrogens to be the most effective treatments. Surgical castration combined with antiandrogens (12%) [10]. This result shows that treatments vary from one country to base on several parameters like the socio economic context, however a study carried out by Biongolo et al. found that surgical castration improved general condition and symptomatology. It is a preferred option in our socio-economic context. [33]. This should prompt us to draw up guidelines specific to our own situation.

The limitation of this study lies in its monocentric nature because the sample size is not large

Conclusion

In our context, prostate cancer is a synchomatic cancer. It is essential to adopt health measures that contribute to the early diagnosis of prostate cancer, such as screening and awareness campaigns.

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All authors contributed to the final correction

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