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ORIGINAL RESEARCH

Retrospective descriptive study of radical prostatectomy for localised prostate cancer in Benin: epidemiological and diagnostic aspects over five years

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Objective: Prostate cancer is a major public health problem in sub-Saharan Africa. This study aims to provide a detailed analysis of the epidemiological characteristics and diagnostic aspects of patients undergoing radical prostatectomy for prostate cancer located at two university hospitals in southern Benin to improve the early management of this pathology in our context.

Methods: This was a monocentric, descriptive, retrospective study conducted over five years (1 January 2018 to 31 December 2022) at the University Urology and Andrology Clinic of Centre National Hospitalier Universitaire Hubert Koutoukou Maga (CNHU-HKM) in Cotonou and the Centre Hospitalier Universitaire Départemental de l'Ouémé-Plateau (CHUD-OP) surgical department. All patients who underwent radical prostatectomy for localised prostate cancer with complete clinical documentation were included. Incomplete records were excluded. Data were collected from patients' medical records using a standardised collection form. Variables studied included sociodemographic data, history and comorbidities, clinical data including International Prostate Symptom Score (IPSS), results of biological (prostate-specific antigen [PSA]) and imaging tests, and anatomical pathology analyses. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 23.0 software.

Results: Of the 38 cases identified, 35 were selected according to our inclusion criteria. The mean age was 65 years. Most patients (57.1%) were asymptomatic. Among symptomatic patients, the mean IPSS was 12.3 ± 4.6, indicating moderate lower urinary tract symptoms (LUTS). On digital rectal examination (DRE), 71.4% of patients had an adenomatous prostate. The median PSA level was 14.6 ng/ml (range 4.6–62.5 ng/ml). Of the patients, 45.7% had PSA levels between 10 and 20 ng/ml. Pathological analyses revealed a predominance of Gleason score 6 (77.1%). TNM (tumour, node, and metastasis) analyses showed a majority of T2N0M0 stages (48.8%). Most patients (74.3%) had a low D'Amico score.

Conclusion: The epidemiological and diagnostic profile of patients undergoing radical prostatectomy in our setting is characterised by a predominance of forms with a good prognosis, diagnosed in patients in their 60s with few symptoms. These results suggest a gradual improvement in the early detection of prostate cancer in Benin, contrasting with the late presentation usually observed in developing countries. This trend could be attributed to increased awareness and better access to specialist urological care in our region, although further efforts are needed to optimise early detection and management.

Keywords: radical prostatectomy, epidemiology, diagnosis, Benin

Introduction

Globally, prostate cancer is a major public health problem, representing the second most common cancer in men and the fifth leading cause of cancer deaths in men, according to 2020 GLOBOCAN data. In developing countries, its incidence is steadily rising while access to early detection and curative treatment remains limited.[1] In sub-Saharan Africa, the situation is particularly worrying, with a tendency towards late recourse and limited access to specialist care, which compromises patients' prognoses.

In Benin, prostate cancer accounts for 69% of all urological cancers, making it the leading cause of urological cancers in the country.[1] This high prevalence is set against a backdrop of limited diagnostic and therapeutic resources, posing a considerable challenge to the disease's optimal management.

Developments in medical practice and improved access to specialist care have gradually changed the approach to prostate cancer in our context. The introduction of routine DRE and PSA testing has led to significant improvements in detecting localised forms accessible to curative treatment, including radical prostatectomy.[2] Radical prostatectomy is the reference treatment for localised prostate cancer, offering excellent oncological results when patients are correctly selected. However, data on the characteristics of patients undergoing this surgical procedure in our environment remain limited.

A better understanding of the epidemiological and diagnostic profile of these patients would enable us to optimise screening, selection, and management strategies in our environment. Therefore, this study aims to specifically analyse the epidemiological characteristics and diagnostic aspects of patients undergoing radical prostatectomy for localised prostate cancer at two university hospitals in Benin, to improve the early management of this pathology and identify factors that may influence postoperative prognosis.

Methods

This retrospective, descriptive study was conducted over five years (1 January 2018 to 31 December 2022) at two university hospitals in southern Benin, the Centre National Hospitalier Universitaire

Hubert Koutoukou Maga (CNHU-HKM) in Cotonou and the Centre Hospitalier Universitaire Départemental de l'Ouémé-Plateau (CHUD-OP) surgical department. These are the region's two main referral centres for specialised urological care.

The source population consisted of all patients who consulted the two centres for prostate pathology during the study period. The study population included all patients who underwent radical prostatectomy for prostate cancer located at these centres during the study period. All patients who underwent radical prostatectomy for localised prostate cancer with complete clinical documentation were included. Incomplete files or files with missing data concerning essential parameters (pathological results or preoperative clinical data) were excluded from the analysis.

Exhaustive sampling included all cases meeting the inclusion criteria during the study period. Data were collected from patients' medical records, using a standardised data collection form previously tested and validated. Data confidentiality was strictly respected throughout the study, with anonymous coding of patient records.

The following parameters were studied:

- Sociodemographic data (age, profession, level of education, marital status, etc.)
- History and comorbidities (hypertension, diabetes, smoking, family history of prostate cancer)
- Clinical data (lower urinary tract symptoms [LUTS] assessed by the International Prostate Symptom Score [IPSS], results of DRE)
- Paraclinical data (prostate-specific antigen [PSA] level, prostate volume measured by ultrasound, prostate magnetic resonance imaging [MRI] results if available)
- Pathological data (TNM classification, Gleason score, D'Amico score)

Data were entered into an Excel spreadsheet and analysed using SPSS software version 23.0. Quantitative variables were expressed as mean and standard deviation or median with extremes according to their distribution. Qualitative variables were expressed as frequencies and percentages.

Results

A total of 38 cases were identified during the study period, and 35 were selected according to our inclusion criteria, giving a 92.1% inclusion rate. The three excluded cases had incomplete data on pathological findings or essential preoperative parameters. The mean age was 65 ± 6.16 years, with extremes of 48 and 76. The most common age group was 60–70, accounting for 62.9% of patients (Table I). Regarding comorbidities, hypertension was the most common (45.6%), followed by diabetes (11.4%). A first-degree family history of prostate cancer was noted in 8.6% of patients. Smoking was present in 2.9% of patients.

Table I: Distribution of patients according to age

Age range (years)	Frequency	%
48–60	5	14.3
60–70	22	62.8
70–76	8	22.9
Total	**35**	**100**

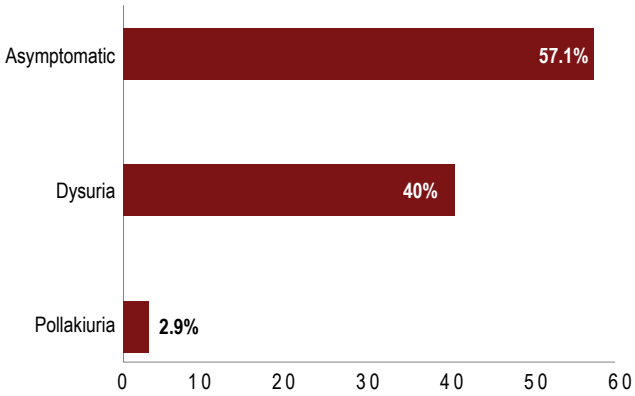

Figure 1: Distribution of patients according to lower urinary tract symptoms

Most patients (57.1%) were asymptomatic, where the cancer was discovered during systematic PSA screening. Dysuria was present in 40% of patients, and pollakiuria in 2.9% (Figure 1). Among the symptomatic patients (42.9%), the mean IPSS was 12.3 ± 4.6, reflecting moderate intensity LUTS. The distribution of patients according to the severity of the IPSS showed that 66.7% of symptomatic patients had moderate LUTS (IPSS between 8 and 19), while 33.3% had severe LUTS (IPSS ≥ 20).

On DRE, 71.4% of patients had an adenomatous prostate, and 33.3% had a nodular prostate. Prostatic induration was noted in 17.1% of patients, while 5.7% had an asymmetric prostate. None of the patients included had tumour extension to adjacent structures on DRE.

The median PSA level was 14.6 ± 2.2 ng/ml, with extremes of 4.6 and 62.5 ng/ml. The distribution of patients by PSA level showed that 28.6% had a level below 10 ng/ml, 45.7% had a level between 10 and 20 ng/ml, and 25.7% had a level > 20 ng/ml. The mean prostate volume was 35.2 ± 29.4 cc. Prostate MRI was performed in 42.9% of patients (*n* =15), with a Prostate Imaging-Reporting and Data System (PI-RADS) score ≥ 4 in 86.7%. TNM analysis revealed a predominance of stage T2N0M0 (48.8%), followed by stage T1cN0M0 (17.1%) (Table II).

Table II: TNM classification of tumours

TNM stage	Frequency	%
T1cN0M0	6	17.1
T2N0M0	17	48.8
T3aN0M0	4	11.4
T3bN0M0	1	2.9
Not determined	7	19.8
Total	**35**	**100**

TNM – tumour, node, metastasis

Pathological analyses of the surgical specimens revealed that the Gleason score was 6 (3 + 3) in 77.1% of cases, 7 (3 + 4) in 14.3%, and ≥ 7 (4 + 3) in 8.6%. The D'Amico score was low in 74.3% of cases, intermediate in 17.1%, and high in 8.6%. The

concordance between the Gleason score of the biopsy and that of the operative specimen was 85.7%, demonstrating good reliability of the preoperative diagnosis in our series.

Discussion

Our study provided an epidemiological and diagnostic profile of patients who underwent radical prostatectomy in our setting. The mean age of 65 ± 6.16 years observed in our series is comparable to data in the African literature. In Senegal, Niang et al.[3] reported an average age of 64.2 years, while Zongo et al.[4] noted 65.4 years in Burkina Faso. This concordance suggests a relative homogeneity in the age of discovery and surgical management of prostate cancer in sub-Saharan Africa. However, this mean age is slightly higher than observed in the Western series, where it varies between 60 and 63 years at diagnosis, probably due to more systematic and earlier screening in these countries.[5] The predominance of patients (62.9%) aged between 60 and 70 years in our series corresponds to the age group in which the incidence of prostate cancer is highest, according to international epidemiological data. This distribution is similar to that reported by other African studies, such as Tengue et al.[6] in Togo, who observed a concentration of cases in this age group.

Regarding comorbidities, the predominance of arterial hypertension (45.6%) is higher than the rates reported in other African series, notably that of Isidore et al.,[7] who found 25.7%. This difference could be explained by variations in the cardiovascular profile of the populations studied, strategies for screening for comorbidities, or regional variations in the prevalence of cardiovascular risk factors. The high prevalence of hypertension in our series may also reflect the known epidemiological association between cardiovascular disease and prostate cancer, as suggested by several recent epidemiological studies.[8]

The low prevalence of smoking (2.9%) in our series contrasts with data from Western countries, where this risk factor is more common. This observation could be linked to socio-cultural differences and a lower overall prevalence of smoking in our population, as suggested by other epidemiological studies carried out in Benin.[9]

Clinically, the high proportion of asymptomatic patients (57.1%) in our series contrasts with the data of Cassell et al.,[10] who reported a predominance of symptomatic forms in their pan-African review. This difference may reflect an improvement in early detection in our setting, which aligns with current recommendations.[11] Indeed, incidental finding by routine PSA assay and routine DRE is now the primary mode of localised prostate cancer diagnosis in our practice, explaining the high proportion of asymptomatic patients in our series.

Among symptomatic patients, the predominance of moderate LUTS with a mean IPSS of 12.3 ± 4.6 is comparable to the results of Zongo et al.,[4] who reported a mean IPSS of 13.1 in their Burkinabe series. This similarity could be explained by the fact that patients with LUTS generally consult at a stage when functional discomfort is significant but still tolerable, corresponding to a moderate IPSS.

The predominance of stage T2N0M0 (48.8%) is in line with the current criteria for selecting patients for radical prostatectomy according to European recommendations.[8] This result is comparable with those of Gosseine et al.,[12] who reported a similar proportion of localised stages in their series. This distribution of TNM stages reflects an appropriate selection of patients for radical surgery in our practice, per international standards. The relatively high proportion of T1c stages (17.1%) also confirms the increasing importance of PSA screening in the early detection of prostate cancer in our setting. However, it is important to note that 14.3% of patients had a locally advanced stage (T3), higher than the rates usually reported in Western series. This observation may reflect a tendency to broaden the indications for radical prostatectomy in our context, where therapeutic alternatives for locally advanced stages (notably radiotherapy) are less accessible.

The median PSA level of 14.6 ng/ml is comparable to the results of Isidore et al.[7] However, this value is higher than those reported in Western series, where the median PSA at the diagnosis of localised forms is generally < 10 ng/ml.[13] This difference could be explained by delayed access to care in our context and less systematic PSA screening in our population. Nevertheless, the distribution of patients according to PSA level shows that a significant proportion (28.6%) had a level < 10 ng/ml, indicating an improvement in early detection in our context. The predominance of PSA levels between 10 and 20 ng/ml (45.7%) corresponds to the "grey" PSA zone, for which the indication for biopsy is formal according to current recommendations.[11]

The high rate of a Gleason score of 6 (77.1%) and the low D'Amico score (74.3%) are comparable with the results of Zongo et al.[4] This predominance of forms with a good prognosis may be explained by the rigorous selection of patients for radical surgery, per international recommendations.[5] This observation is also corroborated by Triki et al.,[14] whose study showed good agreement between biopsy and operative specimen scores, thus validating the reliability of our preoperative selection.

The high proportion of cancers with a good prognosis in our series (Gleason score 6 in 77.1% of cases) contrasts with the general perception that prostate cancers in Africa are mainly diagnosed at an advanced stage with a high Gleason score. This discrepancy could be explained by the fact that our study focuses specifically on patients selected for radical prostatectomy, who represent a sub-population of patients diagnosed at an early stage and present good prognostic criteria. The high concordance (85.7%) between the Gleason score of the biopsy and that of the surgical specimen in our series is higher than the rates usually reported in the literature (60–70%). This observation could be explained by the quality of biopsy samples and pathology expertise at our centres and the predominance of well-differentiated forms in our study population.

A combination of factors may explain the low use of prostate MRI (42.9%). These include limited geographical accessibility (with only a few centres equipped in Benin), the high cost of the examination at the socioeconomic level of the population, and the intermittent availability of equipment. This situation is like that reported by Diop

et al.[15] in their Senegalese series, where they also highlight the difficulties of access to prostate MRI despite its growing importance in pre-treatment assessment.

Conclusion

This study highlighted the epidemiological and diagnostic profile of patients undergoing radical prostatectomy in our setting. Characterised by an average age of 65, a predominance of asymptomatic forms and tumours with a good prognosis, with a Gleason score of mostly 6 (77.1%) and a low D'Amico score (74.3%), this profile reflects a gradual improvement in the screening and selection of patients for radical surgery.

Contrary to the general perception that prostate cancer in Africa is predominantly diagnosed at an advanced stage, our study suggests a favourable evolution in screening practices in our context. A significant proportion of cancers are diagnosed at an early stage and accessible to curative treatment. This encouraging trend could be explained by greater awareness among the public and healthcare professionals and a gradual improvement in access to specialist urological care.

Nonetheless, further efforts are needed to optimise early detection and access to essential complementary tests, particularly prostate MRI. Prospective studies with long-term follow-up would allow us to assess the oncological and functional outcomes of radical prostatectomy in our context and identify prognostic factors specific to our population.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

The authors declare that this submission follows the Responsible Research Publication Position Statements principles developed at the 2nd World Conference on Research Integrity in Singapore, 2010.

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