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Article

Prostate Cancer in Men Under 50: A Togolese Perspective from Sub-Saharan Africa

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Abstract: Background: Prostate cancer is a growing public health concern, as it is being diagnosed more frequently in men under the age of 50. While this cancer is typically associated with advanced age, usually over 60, it is increasingly affecting younger men. The purpose of this study was to provide a comprehensive overview of the epidemiological, clinical, and histopathological characteristics of prostate cancer in men under 50 years of age in Togo.

Methods: It was a retrospective descriptive, cross sectional study of histologically confirmed cases of prostate cancer in young adults at the Pathological Laboratory of Lomé over a period of 10 years (2011-2020).

Result: The study identified 29 cases of prostate cancer in men under 50, accounting for 0.7% of all prostate cancers. The average age of the patients was 45, ranging from 35 to 49. 12 of them had a family history of prostate cancer, and there was a statistically significant relationship between family history and age of onset (p-value = 0.03). The most common clinical presentation was prostatic hypertrophy (40.37%), followed by acute urine retention (20.69%) and micturition disorders (17.27%). The median Prostate Specific Antigen (PSA) was 188 ng/ml with a range of 20 ng/ml to 2100 ng/ml, with a large proportion of patients having PSA levels between 100 and 500 ng/ml. Histologically, all cases were identified as prostatic acinar adenocarcinomas, with 48% classified as well-differentiated and 38% as moderately differentiated. The predominant histoprognostic grade was ISUP grade 1, noted in 65.52% of cases, followed by grade 2 in 20.69%

Conclusion: The incidence of prostate cancer in men under the age of 50 is low in Togo and is often observed in individuals with a family history of the disease. Therefore, it is crucial to increase awareness among the male population, especially those with a family history of prostate cancer, to initiate screening at an early age, around 40 years.

Keywords: Cancer, Prostate, Young adults, Adenocarcinoma, Togo

1. Background

Prostate cancer is a significant public health issue characterized by the proliferation of malignant cells within the prostate gland [1]. In terms of incidence, prostate cancer was the fourth most commonly diagnosed cancer worldwide in 2020, with 1.4 million new cases accounting for 7.3% of all diagnosed cancers and responsible for 375,000 deaths [2]. Histologically, adenocarcinoma accounts for over 90% of prostate cancer cases, while squamous cell carcinoma and neuroendocrine carcinoma are rare [3,4].

Prostate cancer typically affects individuals over the age of 70, with an average age of diagnosis of 74 years and 45% of cases diagnosed after age 75 [2]. Incidence is rare in men under 50, with an average frequency of 0.5% [5]. Young adult prostate cancer refers to cancer that occurs in individuals up to the age of 50. The incidence of prostate cancer in young adults (≤ 50 years old) increased 5.7 times from 5.6 to 32 cases per 100,000 person-years between 1986 and 2008 [7,8]. According to epidemiological surveillance results from 17 regions of the United States, Salinas *et al*., found an increase in prostate cancer incidence in men aged 20-49, particularly since 1991, with these cancers accounting for 10% of new cases diagnosed in 2013 [6]. The clinical features and prognosis of prostate cancer in young adults remain controversial, with some studies suggesting that young age is a poor prognostic indicator [9,10].

Although several studies have reported better survival outcomes in men younger than 50 years [5,11], others have found no significant difference in recurrence, histologic grade, or disease stage [12,13]. Prostate cancer is the most common urological cancer in Togo, representing 74.63% of all urological cancers, and occurring in 8.3% of individuals under 50 years old [3,4].

2. Methods

A descriptive cross-sectional study was conducted to investigate prostate cancer cases diagnosed histologically in individuals under the age of 50 at the Pathological Anatomy Laboratory of Lomé University Hospital from 2011 to 2020. The study population consisted of prostate cancer cases collected from the registers of the laboratory, and the specimens were processed using conventional histology techniques after fixation in 10% buffered formalin. The study variables included frequency, age, personal or family history of prostate cancer, clinical signs, PSA level, nature of the specimen, histological group, and type. To reduce data entry errors, data was entered twice in Microsoft Excel and exported to Epi Info version 7 software for analysis. The study employed descriptive statistics, using percentages for qualitative variables and means with standard deviations for quantitative variables. The statistical tests used were the Pearson Chi-square test for qualitative variables and the Student test for quantitative variables, with a significance threshold of 0.05.

3. Results

3.1. Epidemiological data

This study collected a total of 29 cases of prostate cancer in men under 50, resulting in an annual frequency of 2.9 cases. During the 10-year study period, a total of 4,200 cases of prostate cancer were collected. The proportion of prostate cancer cases in men under 50 was 0.7% of all prostate cancer cases. The average age of the subjects was 45 years, ranging from 35 to 49 years. Almost half of the cases (48.83% or 13 cases) were observed in subjects between 45 and 50 years of age. Out of the 29 patients, 12 (41.38%) had a family history of prostate cancer. There was a statistically significant relationship between the age of onset of prostate cancer and the existence of a family history of prostate cancer (p-value = 0.03) (Table 1).

Table 1. Distribution of patients by family history of prostate cancer/age

	Age						
	[30-35[	[35-40[	[40-45[	[45-50[	Total	%	P-value
Family history of cancer							0.03
No	2	3	5	7	17	58.62	
Yes	0	1	5	6	12	41.38	
Total (%)	6.89	13.8	34.48	44.83	100		

3.2. Clinical and biological data

Clinical presentation was observed as prostate hyper- trophy in 12 cases (41.38%), acute urinary retention in 6 cases (20.69%), unspecified micturition disorders in 5 cases (17.24%), hematuria in 3 cases (10.34%), back pain in 2 cases (6.90%), and adenopathy in 1 case (3.45%). The median PSA level was 188 ng/ml with a range of 20 ng/ml to 2100 ng/ml. A total of 18 patients (62.07%) had a PSA level between 100 and 500 ng/ml (Table 2).

Table 2. Distribution of patients by PSA level (ng/ml)

	Value	%
<100	08	27.58
[100-500[	18	62.07
[1000-1500[	01	3.46
>1500	02	6.89
Total	29	100

3.3. Pathological data

Nineteen prostate biopsies (65.52%) and 10 prostate adenomectomy specimens (34.48%) were used to diagnose all cases as prostatic acinar adenocarcinomas. Of these, 14 cases (48.27%) were well-differentiated, 11 cases (37.93%) were moderately differentiated, and 4 cases (13.79%) were poorly differentiated.

ISUP histoprognostic grade 1 (Gleason score 6) was found in 19 cases (65.52%), followed by grade 5 (Gleason score 9 or 10) in 4 cases (13.8%). There was no statistically significant relationship between the ISUP histoprognostic grade and the age of cancer occurrence (p-value = 1.06) or the existence of a family history of cancer (p-value = 2.21) (Table 3).

In the 10 cases of adenomectomy, the pTNM stage was specified in 6 cases. Of these, 4 cases were at stage pT1N0M0, while one case was at stage pT2N0M0 and pT2N1M0, respectively. The surgical limits were in healthy areas in 9 cases (R0) and in microscopically tumorous areas in 1 case (R1).

Table 3. Distribution of patients by ISUP grade/age/family history of prostate cancer

	ISUP Grade					
	Grade 1	Grade 2	Grade 3	Grade 5	Total	P-value
Age						1.06
[30-35[	2	0	0	0	2	
[35-40[	3	0	1	0	4	
[40-45[	8	0	1	1	10	
[45-50[	6	3	1	3	13	2.21
Family history of cancer						
No	12	1	2	2	17	
Yes	7	2	1	2	12	
Total (%)	65.52	10.34	10.34	13.8	100	

4. Discussion

Our study found a proportion of 0.7% of prostate cancer in subjects under 50 years of age, which is similar to Alioune *et al*.,'s study in Senegal (0.45%), but lower than Catalona *et al*.,'s findings (2%) [14,15]. However, the frequency of prostate cancer in young adults is higher in Australians and Asians (4%), and Caucasians and black Americans (9% and 3% respectively) [5]. The under-medicalization of healthcare, limited access to healthcare facilities, lack of specialist pathologists and oncologists, and absence of cancer control programs are some of the reasons for the low frequency in sub-Saharan Africa.

All the histological findings were prostatic acinar adenocarcinomas, with a predominance of ISUP grade 1 (Gleason score 6) in 65.52% and ISUP grade 5 (Gleason score 9 or 10) in 13.8%. This differs from the findings of Varkarakis *et al*., and Huang *et al*., who found a predominance of ISUP grade 2 [10,16], and Alioune *et al*., who found a predominance of ISUP grade 3 (Gleason score 7 = 4 + 3) [14]. Ji *et al*., also found a predominance of ISUP grade 3, with a statistically significant correlation with age (p-value = 0.002) [19]. However, we did not find a statistically significant relationship between the histoprognostic grade of ISUP and age of cancer occurrence (p-value = 1.06) or the existence of a family history of prostate cancers (p-value = 2.21). Huang *et al*., also did not find a statistically significant association between histoprognostic grade and age (p-value = 0.652) [10]. In contrast, Bleyer *et al*., and Ji *et al*., found a statistically significant relationship between histoprognostic grade and age with p-values of 0.043 and 0.002, respectively [5,19]. Survival outcomes in men younger than 50 years have been reported to be better in several studies [5,11], but others found no significant difference in recurrence, histologic grade, and disease stage [12,13]. The issue of the age of onset of prostate cancer screening is raised, particularly with more and more cases diagnosed around 40 years old [20]. We found 4 cases of stage pT1N0M0 out of the 6 cases specified in the pTNM classification, which indicates earlier detection of prostate cancer with low grade and stage disease in young men and a superior disease outcome [7]. Aprikian *et al*., revealed similar histologic grade and disease stage between the younger and older population [21].

The average age of our subjects was 45 years, which is similar to Alioune *et al*.,'s (44.99 years) and Varkarakis *et al*.,'s (41.7 years) studies [14,16]. Hereditary forms account for 43% of prostate cancers occurring before age 50, and 41.38% of our patients had a family history of prostate cancer, with a statistically significant relationship between family history and age of onset (p-value = 0.03) [10,17,18].

Clinically, prostatic hyperplasia was present in 41.38% of our patients, while Alioune *et al*., and Huang *et al*., found incidental discovery in the majority of cases (55.9% and 38%, respectively) [10,14]. The median PSA level in our study was 188 ng/ml, much higher than Alioune *et al*.,'s (26.62 ng/ml) and Varkarakis *et al*.,'s (3.8 ng/ml) studies [14,16]. Although screening for prostate cancer in the presence of elevated serum PSA levels is recommended for men over 50, no medical organization has suggested PSA screening for men in their 30s or 40s [5].

5. Limitations

Like many retrospective studies, our study has certain limitations, including missing data such as family history of prostate cancer in most of the records. In addition, the lack of a population-based cancer registry makes it challenging to

compare our findings with those of the general population. Nonetheless, our study is noteworthy as it is only the second study conducted in sub-Saharan Africa focusing on prostate cancer in individuals under 50 years old, in addition to the study conducted by Alioune *et al*., [14].

6. Conclusion

Prostate cancer is a significant public health issue in Togo, primarily affecting men over the age of 75. While hereditary forms of prostate cancer in young adults are typically diagnosed at high grades, this is not the case in Togo, likely due to the limited sample size. Therefore, it is crucial to educate men, especially those with a family history of prostate cancer, about the importance of early screening starting at age 40.

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