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Prostate Cancer Screening, Detection and Treatment Practices, Among Sub-Saharan African Urologists

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ABSTRACT

Introduction: Prostate cancer is reported to be the leading cancer in men in Sub-Saharan Africa (SSA) and the number of prostate cancer deaths is expected to double in the next 20 years. Despite the importance of this public health issue in SSA, there remains relatively limited information about practices related to prostate cancer treatment in this population.
Objective: We conducted a survey of 28 urology practices in SSA to evaluate the scope of available screening, detection and treatment.
Materials and Methods: Screening was more commonly reported as a part of general medical care in South Africa (SA) compared with East or West (EW) Africa. However, use of digital Rectal Examination (DRE) and Prostate Specific Antigen (PSA) were used at similar rates for screening in all locations. Screening is primarily focused in men over age 50 and those with symptoms. Routine screening was the primary reason for screening use in SA, while symptoms were the primary reason for screening use in EW. Financial and cultural barriers to screening were more commonly reported in EW than SA. Similar detection approaches were used in all regions, with free PSA and PSA velocity being more commonly used in SA than EW. Six core biopsies were more commonly used in EW and 12 core biopsies were more common in SA. Trans urethral ultrasounds and bone scans were more commonly used in SA than EW. Treatment options were similar in all regions, with brachytherapy less likely to be used in EW than SA.
Results: The descriptive data suggest that differences in patterns of screening, detection and treatment exist across Africa. Differences by geography may also reflect differences in SES and racial composition of the populations in each region.

Key Words: Prostate cancer, Screening and Detection, Practice guidelines, Sub-Saharan Africa

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INTRODUCTION

Relatively little is known about the epidemiology of Prostate cancer (PCa) in men in Sub-Saharan Africa (SSA), however it is clear that men of SSA descent around the world suffer disproportionately from PCa[1]. The International Agency for Research on Cancer (IARC) estimates that PCa is the leading cancer in terms of incidence and mortality in Africa and that PCa is a growing problem in Africa: Approximately 29.707 African men will die of PCa in 2010 and approximately 57.048 African men will die of PCa in 2030[2]. This represents a 92% increase in the number of PCa deaths in Africa in the next two decades.

Unfortunately, data are not available to address whether changes in PCa screening and detection practices have made an impact on PCa incidence or mortality in SSA. Based on time trend data from population-based tumor registries in Kampala (2002-2006)[3] and Kyadondo (1991-1994)[4] in Uganda and Harare in Zimbabwe (1990-1997)[5], there appears to be a small and steady increase in PCa incidence in the past two decades, with no spike in incidence during the period where PSA screening became prevalent such as has been observed in the US, However, there has been concern that PCa incidence and mortality rates in SSA may be underestimated due to lack of screening, limited population-based tumor registry data and under-diagnosis[6].

While PCa is likely to represent a major contributor to the overall burden of cancer in Africa, practices related to PCa screening, detection, diagnosis and treatment are poorly described. To provide baseline information about PCa clinical practices in SSA, we have undertaken a non-random survey of urologists practicing in SSA and describe those practices here.

MATERIALS AND METHODS

We identified urologists through international organizations including the Pan-African Urological Surgeons' Association (PAUSA), the African Organization for Research and Training in Cancer (AORTIC) and the South African Urological Association (SAUA). We solicited a single respondent from each institution to respond to a web-based questionnaire about PCa practices related to screening, detection, diagnosis and treatment. The questionnaire is presented as supplementary information. Tabulations were made of all responses. Due to the small numbers of centers represented, no statistical analyses were undertaken in this descriptive report.

RESULTS

We received responses from 28 institutions in three African regions: East Africa (Sudan, Tanzania, Uganda, *N*= 5), the Republic of South Africa (*N*= 18) and West Africa (Ghana, Nigeria, Senegal, N=5). These institutions represented general hospitals (*N*= 8), private practice urologists (*N*= 13), specialized cancer centers (*N*= 4), two other practice settings (not specified) and one university hospital.

Screening and Detection

Screening is not a routine part of medical care in East and West Africa, but is relatively common in South Africa (Table 1). In all cases, more men are screened if they are over age 50 or have urinary symptoms than men who are under age 50. Men who are identified as having a family history of PCa are also commonly screened in South and West Africa, but less so in East Africa. Digital Rectal Examination (DRE) is commonly used as a means of PCa detection. Similar patterns of DRE usage were reported in each of the regions. In general, screening is reported to be less widely used in East Africa than West or South Africa.

When asked about the patients' perceived reasons for not undergoing screening at their centers, the respondents identified lack of understanding/knowledge and financial constraints as the most common reasons that screening was not undertaken. Access was also an important factor in East and West Africa, but less so in South Africa. Fear was cited by more than half of respondents in South and West Africa, but not in East Africa. Less common reasons for lack of screening were religious and cultural reasons, although these reasons were more common in West Africa than in East or South Africa. The majority of cases of PCa in East and West Africa are detected via symptoms, while the majority of cases in South Africa are detected by screening (Table 1).

Table 1: Screening and Detection: Percent of Centers Responding in the Affirmative

Topic	Question	East Africa*(*N*=5)	West Africa** (*N*= 5)	East & West Africa(*N*=10)	South Africa (*N*= 18)
Screening	Is prostate cancer screening a routine part of general medical care?	0	0	0	61
	Is PSA screening usually offered or performed during routine physical examinations?	60	80	70	89
	If yes, what groups are typically offered screening?				
	Men under age 50	0	20	10	6
	Men over age 50	40	60	50	72
	Men with urinary symptoms	40	60	50	56
	Men at high risk (e.g. family history positive)	20	80	50	67
	Is DRE screening usually offered or performed during routine physical examinations?	60	100	80	94
	If yes, what groups are typically offered screening?				
	Men under age 50	0	40	20	22
	Men over age 50	40	100	70	67
	Men with urinary symptoms	40	100	70	78
	Men at high risk (e.g. family history positive)	40	100	70	72
	What are the patient's perceived obstacles to prostate cancer screening?				
	Lack of understanding/ knowledge	60	80	70	72
	Financial	60	100	80	50
	Religious	0	20	10	0
	Cultural	0	40	20	11
	Access	80	80	80	28
	Fear	0	60	30	50
Detection	What is the most common reason for prostate cancer detection?				
	Routine screening	20	20	20	72
	Urinary symptoms	60	80	70	28

*Uganda, Sudan, Tanzania; **Senegal, Ghana, Nigeria

Table 2: Diagnosis and Treatment: Percent of Centers Responding in the Affirmative

Topic	Question	East Africa* (*N*= 5)	West Africa** (*N*= 5)	West & East Africa (*N*=10)	South Africa (*N*= 18)
Diagnosis	What information is commonly used for prostate cancer detection and diagnosis?				
	Biopsy	100	100	100	100
	Total PSA	80	100	90	83
	Free PSA	100	20	60	44
	PSA velocity	20	40	30	17
	DRE	60	100	80	83
	Transrectal ultrasound (TRUS)	20	20	20	28
	What approaches are commonly used in diagnosis and staging?				
	PSA	60	100	80	100
	DRE	80	100	90	100
	6-core biopsy	80	80	80	17
	12-core Biopsy	0	40	20	72
	Other biopsy	20	20	20	17
	Transrectal ultrasound (TRUS)	40	40	40	89
	Bone scan	40	80	60	89
	Chest X-Ray	60	60	60	17
	CT scan	40	80	60	6
	MRI scan	0	40	20	11
	Lymph node biopsy	0	0	0	11
Treatment	Which treatment options are available to prostate cancer patients atyour center?				
	Prostatectomy	80	80	80	94
	Robotic prostatectomy	0	0	0	0
	Radiation after prostatectomy	0	60	30	16
	External beam radiation	40	100	70	83
	Brachytherapy	0	40	20	72
	High intensity focused ultrasound (HIFU)	0	0	0	11
	Intensity modulated radiation therapy (IMRT)	0	0	0	6
	Robotic radiosurgery (e.g. Cyberknife)	0	0	0	0

Cryotherapy	0	0	0	0
Androgen deprivation therapy (including orchiectomy)	60	100	80	100
Other hormone therapy	20	80	50	56
Chemotherapy	40	80	60	67
Expectant management with periodic PSA	40	60	50	89
Expectant management with periodic PSA and prostatic acid phosphatase	0	40	20	27

*Uganda, Sudan, Tanzania; **Senegal, Ghana, Nigeria

Diagnosis and Treatment

For diagnosis of PCa, biopsy is used by all respondents and total PSA is used by most (Table 2). Free PSA is reported to be used by all East African respondents but far fewer in South and West Africa. DRE was also commonly used, but again apparently less common in East Africa than West Africa. PSA velocity and TRUS were less commonly reported in all regions. In terms of diagnostic and staging approaches, PSA and DRE were again used by all South and West African respondents, but fewer East African centers. 6-core biopsies were the most commonly used formats in East and West Africa, while 12-core biopsies were more commonly reported in South Africa. TRUS was more widely reported in South Africa than in other regions, while chest X-rays were more commonly reported in East and West Africa than South Africa. In contrast, CT scans were reported to be more widely used in East and West Africa than South Africa. Other approaches including MRI and lymph node biopsies were less commonly reported. Bone scans were common in South and West Africa and less so in East Africa. In all regions, the most commonly used means of PCa treatment were prostatectomy and androgen deprivation therapy (including orchiectomy). Other common treatments included external beam radiation therapy, chemotherapy and expectant management with PSA screening (particularly in South and West Africa). Many more recent or equipment-intensive therapy modalities were not widely reported in the respondents' institutions (Table 2).

DISCUSSION

We report on practices related to PCa screening, detection, diagnosis and treatment in sub-Saharan Africa. These data suggest that there are differences in the usage of some of these modalities in Africa compared to the US and Europe and regional differences within Africa also exist. However, we also note that when data from East and West Africa were combined (Tables 1 and 2), it appears that some differences between East, South and West Africa disappear.

In the developed world, there remains considerable debate about the optimal use of screening, detection, diagnosis and treatment modalities to minimize morbidity and mortality from PCa. Overall survival in men who are diagnosed with PCa at an early stage is significantly better than in men diagnosed later[7], making early detection important for some men. While many PCa's that are detected by screening and are treated surgically have clinical significance to the

patient[8, 9], even tumors with a potentially poor prognosis may not lead to significant morbidity or mortality, particularly in older men. More recently, two large randomized studies did not show a mortality benefit from the use of PSA screening[10] or showed a mortality benefit but also noted that an unacceptable number of men needed to be treated in order to show a mortality benefit[11]. Controversy therefore exists about what kind of treatment (if any) should be pursued in these cases[12]. Unnecessary treatments may result in morbidity that could be avoided if tumors destined to an indolent course could be identified[13].

Debate continues on these points in the developed world and the optimal use of PCa screening, detection, diagnosis and treatment regimens in Africa have not been established. As shown by the data presented here, access to a complete range of options remains limited in some parts of Africa and many men are not diagnosed at an early stage. Earlier reports of PCa in Africa suggest that PCa is diagnosed at higher tumor stage and grade than in Europe or the US[14].

There are many limitations to this descriptive report. This survey represents a non-random sample of practitioners in Africa based on access to urologists who are active in professional organizations and were accessible by email. Based on their practice distributions, these clinicians may reflect a more referral center sample than all urologists. The sample size was also relatively small, and we cannot make inferences about how representative this sample is of all urologists in Africa.Nonetheless, the number of urologists practicing in Africa is relatively small. It has been estimated that there are approximately 120 urologists in West Africa, 64 in East Africa and approximately 220 members of the South African Urological Association. The Pan-African Urological Surgeons' Association (PAUSA) has approximately 80 members.

The 2009 American Urological Association (AUA) recommendations on PSA screening[15] advise that men should be offered screening starting at age 40 who have a life expectancy of at least 10 years. Screening should include both a PSA test and a Digital Rectal Exam (DRE), although the AUA recommendations also state that the decision to undergo testing is a personal decision that should be made in terms of the risks and benefits, including the risk of over-detection of cancers which may not need treatment. Our data suggest that screening is generally only applied in men over age 50 in SSA. In addition, the AUA does recommend a single PSA threshold at which a biopsy is indicated. PSA levels in men who are newly diagnosed with PCa are typically higher in African men than men in the US or Europe[14] and no standard for a PSA level that may trigger prostate biopsy has been established specifically for African men. Screening in East and West Africa tends to be total PSA, with free PSA and PSA velocity not being used as widely.

Other aspects of prostate cancer practice recommended by the AUA include no need for bone scan to stage asymptomatic men with clinically localized prostate cancer if their PSA level is equal to or less than 20.0 ng/ml. CT or MRI may be used in staging of high-risk clinically localized prostate cancer when the PSA is greater than 20.0 ng/mL or when locally advanced or when the Gleason score is greater than or equal to 8. In Africa, we observed that CT scans were commonly used in EW Africa, while MRI was more common in SA.

We did not solicit or receive responses from clinicians in other disciplines who may diagnose or treat PCa, including general internists, radiation oncologists, medical oncologists and others. Therefore, the spectrum of practice remains somewhat limited. In addition, our data do not distinguish practice

preferences from availability of screening, diagnosis, detection, or treatment modalities. Some centers may not have access to specific modalities, while other centers may choose not to use these modalities and/or have not developed them at their institution because they do not value them as part of clinical care.

While anecdotal, these results provide information about practices of screening, detection and treatment of PCa in SSA, where relatively limited information about these practices is available. Using these and other related data, a better understanding of practice patterns can be identified to develop practice recommendations that are appropriate for SSA populations and will provide optimal benefit for men in SSA to minimize morbidity and mortality from PCa.

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