

## Research Article

## Metastatic Profile of Newly Diagnosed Prostate Cancer Patients in Calabar, South- South Nigeria

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Received: 22.08.2020

Accepted: 09.09.2020

Published: 23.10.2020

**Journal homepage:**<https://www.easpublisher.com/easjms>**Quick Response Code**

**Abstract:** African men tend to present late with advanced prostate cancer (CaP) making prognosis grave despite treatment. This study was carried out to document findings in patients with metastatic prostate cancer at presentation. Seventeen (17) patients with metastatic CaP at presentation who had complete data were recruited. Peak age group was between 51 and 70 years of age with the commonest site of metastasis being bone (68.42%) and 2 patients (10.52%) having multiple sites of metastasis. The PSA range was 5.5-140 ng/ml with most patients having values above 20ng/ml and most patients were found to be within the higher prognostic grade groups. Metastatic prostate cancer is a challenge in our setting and there is need for routine screening for this disease.

**Keywords:** Metastasis, Prognostic Grade Group, Prostate Cancer.

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### INTRODUCTION

Prostate cancer incidence and mortality rates are known to vary widely by geographical location and ethnicity, with rates believed to be influenced by genetics, culture, diet and other environmental factors [1, 2]. Men of African descent are more likely than white men to be diagnosed with aggressive prostate cancer (CaP) and in Africa, significantly higher proportion of men present late with advanced disease compared to most other regions of the world [3, 2, 4]. Reports from different parts of Nigeria indicate that prostate cancer is common and many patients present late with advanced and complicated disease [5-7]. In Calabar, South Southern Nigeria, prostate cancer is noted to be the most common urologic malignancy with significantly large number of patients presenting late, with advanced disease [8-11]. The principal challenge with prostate cancer is its propensity to metastasize which arises from specific molecular mechanisms and interactions leading to local invasion, extravasation and distal migration from the primary site, followed by endothelial attachment, transmigration and site-specific establishment of metastases at secondary sites [12]. This study was carried out to document findings in patients with metastatic disease among a cohort of histologically diagnosed CaP patients.

### MATERIAL AND METHODS

Between January 2001 and December 2010, 111 histologically diagnosed cases of prostate cancer were recorded at the University of Calabar Teaching Hospital, Calabar. Records retrieved from their case notes, clinic and ward registers and histopathology records were studied. Patients' demographic data, histologic diagnoses including Gleason's grade groups, and PSA values were extracted and analyzed.

### RESULTS

Of the 111 patients studied, 23 (20.7%) had metastasis at presentation while 67 (60.4%) had no evidence of metastasis (Figure 1). Out of these 23 patients, 17 had complete data and these were recruited for the study.

The peak age group was between 51 and 70 years of age with one case of metastasis each recorded in the 31-40 and 81-90 age groups (Table 1). The commonest site of metastasis was bone (68.42%), followed by rectum (10.52%) as seen in Figure 2. Multiple sites of metastasis were recorded in 2 patients (10.52%). One had metastasis to the bone and abdomen and the other to both bone and brain. The PSA range was 5.5-140 ng/ml with most patients having values above 20ng/ml (Figure 3). Most patients were found to

be within the higher prognostic grade groups (Groups 3 to 5) (Figure 4).

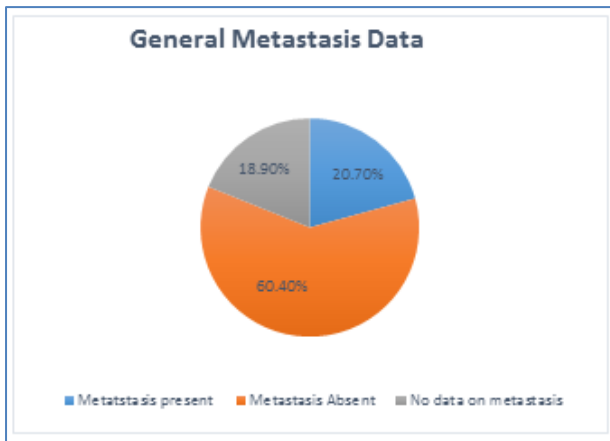


Fig-1: General metastasis data

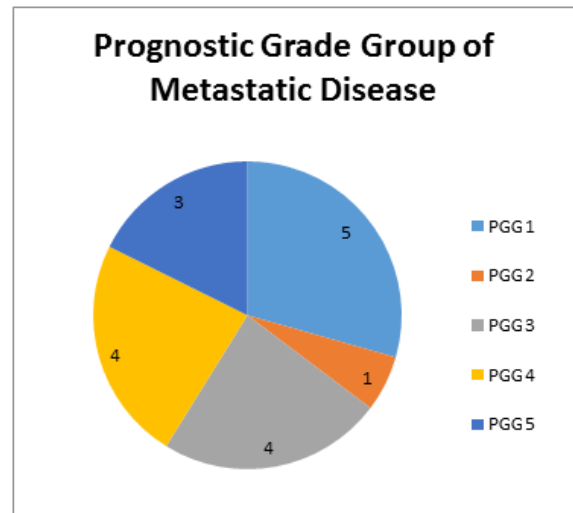


Fig-4: Prognostic grade group of metastatic disease

Table-1: Age at Metastasis

AGE	NO OF PATIENTS WITH METASTASIS
31-40	1
41-50	-
51-60	6
61-70	6
71-80	3
81-90	1

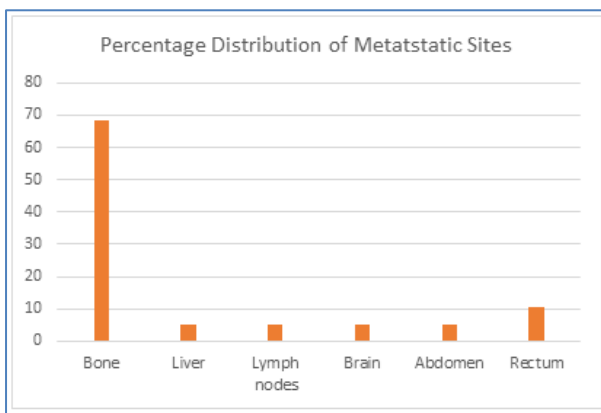


Fig-2: Distribution of Metastatic Sites

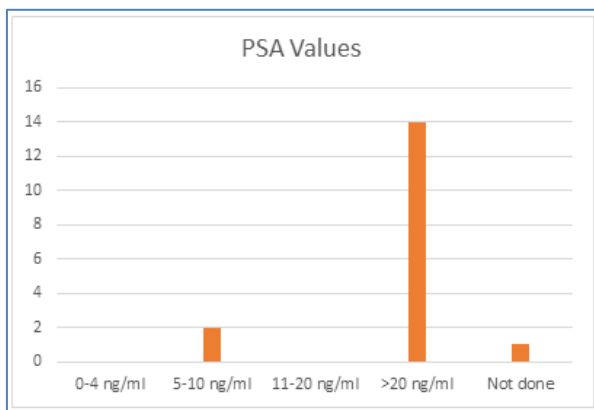


Fig-3: PSA values

## DISCUSSION

Prostate cancer is considered a disease of the elderly with risk increasing with advancing age. It occurs rarely in younger men and when it does it is usually an undifferentiated disease which is aggressive with resultant poor prognosis [13]. The peak age in our cohort of patients with metastasis at presentation was 51-70 years, with one patient in the age group of 31-40 years being diagnosed with metastatic disease? A previous study in Calabar had recorded more aggressive disease in the younger age group [10]. The commonest site of metastasis was to bone (68.4%), followed by spread to rectum (10.52%), and with spread to liver, lymph nodes, brain and abdomen noted to be 5.26% each. This is in consonance with what is known about the disease as previous studies indicate that there is bony metastasis in as high as 80% of CaP cases and above with attendant complications like bone pain, spinal cord compression and fractures (pathologic/ non-pathologic) [14-16]. The reasons for its predilection to metastasize to bones as well as the exact mechanisms of metastasis are not known but however believed to be due to tumour biology [16, 17]. Theories put forward include the “seed and soil” hypothesis as well as the homing theory [14, 18, 19]. Metastasis to visceral sites is less common and is mostly to the lungs and liver but more importantly signifies a graver prognosis [20-23]. Most of our patients had PSA values greater than 20 ng/ml. Very high PSA values are indicative of more advanced disease with associated worse prognosis which was seen in our study. Even though this is the norm, certain patients have been noted to develop metastatic CaP at low PSAs. PSAs as low as 0.02ng/ml have been recorded in such patients and they are noted to have undifferentiated and very aggressive disease [24, 25, 26] Iwamoto and colleagues [27] in their study from 2000-2014 on 1873 patients had concluded that PSA is a useful biomarker for predicting prognosis at levels between 20 and 70 ng/ml. While Gleason’s score is the single most important predictor of prostate cancer prognosis, the new grading system, known as the Grade

Grouping System, better classifies CaP [28]. It is a five-tiered grading system with a higher prognostic discrimination than the most commonly used combinations of the Gleason score which has been accepted by the World Health Organization and the International Society of Urological Pathology [29-31]. Most (11) of our patients (64.70%) were within Gleason grade groups 3-5 indicating more advanced disease with poorer prognosis. The difference in Grade Groups is especially critical for selecting a therapy and has the potential to substantially reduce overtreatment of low-risk tumors. In the new system, the Gleason score 6 corresponds to the Grade Group 1, in which are typically tumors with the lowest grade possible on needle biopsy. In this case, treatment options, such as radical prostatectomy or radiotherapy, would be considered an over-treatment for most men because of the indolent nature of the disease. An older man with Grade Group 1 cancer will benefit better from active surveillance (after proper consideration of the clinical condition and other relevant parameters like the clinical stage and PSA level) than radiotherapy or surgery, which may be accompanied with significant side effects like erectile dysfunction or incontinence. Meanwhile, a younger man will require closer follow-up to evaluate pertinent treatments, because he may be prone to develop more aggressive cancer later on in life. The original Gleason system typically considers Gleason score 7 as requiring radiation therapy. However, in the new system Gleason score 7 has been split up into Grade Group 2 (Grade 3+4) and Grade Group 3 (Grade 4+3), in which Grade Group 3's prognosis is twice as bad as Grade Group 2's. The management for Grade Group 3 includes hormonal therapy in addition to radiation/ radical prostatectomy, which carries significant side effects, whereas Grade Group 2 is treated with radiation/ radical prostatectomy and subsequent follow up. Similarly, the Gleason scores 8-10 were typically considered one grade in terms of management, yet in the new grading system, these grades have been split into Grade Group 4 and Grade Group 5, where again the latter is twice as aggressive as the former [32, 33, 28]. A greater percentage of men will receive a more appropriate treatment now than they would have had, using the most common combinations of the Gleason score.

## CONCLUSION

Metastatic prostate cancer is a challenge in our setting with its attendant complications. Early diagnosis remains key in the management of this common disease bringing to the fore, once again, the need for routine screening for the disease.

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