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Complications Following Prostate Biopsy in a Tertiary Hospital in Trinidad and Tobago

Kirk Gooden[1], Nastassia Rambarran[2], Lester Goetz[1] and Satyendra Persaud[1*]

[1]Department of Urology, San Fernando General Hospital, Trinidad and Tobago.
[2]The 4H Hospital, Barbados.

Authors' contributions

This work was carried out in collaboration between all authors. Authors KG, SP and LG designed the study, wrote the protocol and wrote the first draft of the manuscript. Authors NR and SP managed the analyses of the study. Authors SP and KG managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Objective: To prospectively evaluate the complications of prostate biopsy at the San Fernando General Hospital.
Methods: All patients, who underwent prostate biopsy between June, 2013 and September, 2014 were prospectively evaluated at the San Fernando General Hospital. A pre biopsy questionnaire was obtained to provide demographic information. Immediate complications were recorded at the time of the procedure. Patients were contacted by telephone every week for four weeks following biopsies and complications recorded. Clinical information included race, PSA, prostate volume, hypertension, diabetes, previous hospital admission and recent antibiotic usage.
Results: From June 2013 to September 2014, approximately 233 men underwent prostate biopsy at the San Fernando General Hospital. The mean age of the patient was 68.2 years. PSA elevation was the commonest indication for prostate biopsy (66.6%). Most patients tolerated the procedure with minimal discomfort. The most common complication was haematuria and was noted in 57.7% of patients with mean duration of 2.95 days. 8.6% complained of hematospermia with a mean number of ejaculates of 2.6. Rectal bleeding was reported in 19.2% with a mean duration of 1.95

**Corresponding author: E-mail: satyendrapersaud@yahoo.com;*

days. 15% complained of new onset or worsening of voiding symptoms and 1.4% experienced acute urinary retention. Of the 7.7% who experienced infective complications of which 3 (1.4%) required hospital admission.

Conclusion: Transrectal ultrasound guided needle prostate biopsy is associated with frequent minor complications and few major complications. Infective complications still remain a concern and further study is still required to identify possible contributing risk factors.

Keywords: Prostate cancer; biopsies; Trinidad and Tobago.

1. INTRODUCTION

Prostate cancer is the second most commonly diagnosed cancer among men worldwide and within the Caribbean region, this burden is particularly high [1]. Transrectal ultrasound (TRUS) guided prostate biopsy has been established as the standard by which prostate cancer is diagnosedglobally [2]. Consequently, prostate biopsies are among the most commonly performed urological procedures.

Biopsies are not without complications which may include pain, fever and sepsis, rectal bleeding, hematuria, hematospermia and acute urinary retention [3]. While, most are minor and self-limiting, certain complications, particularly those which are infective in nature, may be a significant source of morbidity and even mortality.

At the San Fernando Hospital, we perform approximately 8-10 biopsies weekly. All biopsies are conducted by trainedresidents following informed consent. Oral anticoagulants are discontinued one week prior to biopsy and oral ciprofloxacin (500 mg) is administered one hour before the procedure and continued twice daily for 3 days afterwards. We follow an extended template of 12 coresand utilize a peri-prostatic block with 1% lidocaine. Repeat biopsies may have up to 20-core saturation biopsies donebut these were very few and are unlikely to have impacted the results.

While complications following prostate biopsies have been documented in the international literature [3], no data have been reported for Trinidad and Tobago to the best of our knowledge. Our study therefore aimed to assess the rate of complications in our unit, which serves as a national tertiary referral centre.

2. MATERIALS AND METHODS

The study population consisted of men who underwent prostate biopsy at the San Fernando General Hospital for a 16-month period between June 2013 and September 2014. Following consent, a pre-biopsy questionnaire was administered to obtain demographic and clinical data. Clinical data included age, race, indication for biopsy, comorbidities, previous biopsy and recent antibiotic use.

Pain scores were recorded immediately following biopsy. Any immediate complications were noted at the time of biopsy and patients were contacted weekly for four weeks via telephone where further complications were documented. Data were compiled in Microsoft Excel and analysed using STATA version 20. Tests of association were performed with a p value of 0.05 being considered as statistically significant.

Ethical approval was obtained from the Clinical Governance and Ethics Committee.

3. RESULTS

3.1 Demographics

233 men underwent biopsy during the study period. We were unable to reach 13 men for follow-up and the analysis was therefore limited to 220 men. The mean age of the population was 68.2 years (Std Dev=7.52). 56.6% were Afro-Trinidadian and 35.2% were Indo-Trinidadian. 67% underwent biopsy for an elevated PSA, 10.4% for an abnormal digital rectal examination and 22.2% for both.

3.2 Pain

The procedure was well tolerated with a mean pain score of 1.85 (SD=1.7) on a visual analog scale.

3.3 Post-operative Bleeding

The most frequent complication was hematuria (57.7%) and the mean duration was 2.95 days. All cases were self-limiting and none required hospital admission. In 76.2% of men, hematuria lasted 3 days or less and hematuria lasting more

than 7 days was noted in 14.8%. Rectal bleeding occurred in 19.1% of patients with a mean duration of 1.95 days. Of note, one patient experienced a massive PR bleed which required hospitalization. Hematospermia occurred in 8.6%, with a mean duration of 2.7 ejaculates or 2.6 weeks (Std. Dev =1.6).

3.4 Febrile Complications

17 patients (7.7%) reported fever following biopsy of whom 3 required hospitalization and a further 4 were treated by their general practitioner. The remainder self-medicated at home and settled on their own. Among this group, known risk factors for febrile complications were recorded and are summarized in Table 1. Only diabetes achieved a statistically significant correlation.

Table 1. Risk factors among patients with febrile complications

Characteristic	Frequency (%)	P value
Age >60	16 (94.1)	>0.05
Diabetes mellitus	9 (52.9)	0.04
Previous biopsy	6 (35.3)	>0.05
In-situ catheter	2 (11.8)	>0.05
Recent antibiotic use	4 (23.5)	>0.05
Previous prostatitis	1 (5.9)	>0.05

3.5 Lower Urinary Tract Symptoms (LUTS)

15% reported experiencing either the onset or worsening of their lower urinary tract symptoms following biopsy and 3 patients (1.4%) developed acute urinary retention. There was no difference in mean prostate volume among those who had LUTS and those who did not (P=0.113).

All complications are summarized in Table 2.

Table 2. Complications among patients undergoing TRUS-guided prostate biopsy

Complication	Number of patients (%)
Hematuria	127 (57.7)
Rectal bleeding	42 (19.1)
Hematospermia	19 (8.6)
Lower urinary tract symptoms	33 (15)
Urinary retention	3 (1.4)
Febrile complications	17 (7.7)
Syncope	2 (0.9)

4. DISCUSSION

TRUS guided prostate biopsy is usually well tolerated. While major complications are rare, minor complications including bleeding and pain are fairly common and in some cases such as infectious complications, have increased in frequency with time [4].

Gross hematuria is common following a prostate biopsy. The incidence of hematuria has been very variable, ranging from 10-84% largely due to hematuria being variously defined [3]. At 57.7%, the rate of hematuria among our patients fell within the range reported in the literature. In our study, 23.7% reported hematuria lasting > 3 days. Comparably, the authors of the European Randomized Study of Screening for Prostate Cancer (ERPSC) noted hematuria > 3 days' duration among 22.6% of men in the Rotterdam arm [5]. Although it was not objectively assessed, very few patients reported being significantly bothered by their hematuria which was typically mild and this is in keeping with international data [6]. We always sample 12 cores and there is controversy as to whether the number of biopsy cores influences the rate of hematuria [7,8].

The incidence of rectal bleeding has also varied widely – between 1.3% and 45% [3]. Rosario noted rectal bleeding among 36.8% of patients noting that in the vast majority it was perceived as mild and wasn't associated with a high degree of bother [6]. Among, our patients the incidence of rectal bleeding, at 19.1%, was aligned with this data. Interestingly Ghani noted higher rates of rectal bleeding following 8- to 10-core biopsy compared with those who had undergone a sextant biopsy template [7].

We noted hematospermia in 8.6% of men, bearing in mind that not all men were sexually active. The reported incidence of hematospermia following biopsy varies between 1.1% and 93% which may reflect the influence of cultural issues, sexual practices, as well as variations in data collection [3]. Among 63 men, Manoharan noted a mean duration of hematospermia of 3.5 weeks or 8 ejaculates [9]. We are cognizant of the fact While we did not test for these associations hematospermia has been positively correlated with number of biopsy cores, prostate volume, age and previous TURP [5,10].

Fever following TRUS guided prostate biopsy is well documented and the incidence of infection leading to hospitalization varies from 0-6.3% [3]. In our study, there were 3 cases (1.4%) of

hospitalizations among 17 (7.7%) who reported a post-procedure fever. When one considers that cases were self-reported, this higher rate of fever may not be surprising as Rosario and colleagues noted fever among 17.5% of patients in a questionnaire based study [6]. Infectious complications leading to hospitalization has been increasing in the USA and Canada and most commonly result from Escherichia coli among which high rates of fluoroquinolone-resistance have been reported [3]. It is therefore interesting to note that we have recorded ciprofloxacin resistant E. coli among 56% of men undergoing biopsies in our unit [11] – the extent to which this may have contributed to our higher than average rate of post biopsy fever, is unclear. Given our level of ciprofloxacin resistance it may be worthwhile to review our antibiotic protocol. A number of factors have been identified as risk factors for developing infectious complications post biopsy including diabetes, previous biopsy, international travel, previous antibiotics and the presence of an indwelling catheter [4]. However, among our patients only the presence of diabetes attained statistical significance.

We assessed pain associated with biopsy using a visual analog scale (VAS) one of several available and validated instruments [3]. Considerable data exist in support of some form of analgesia as biopsy can cause significant pain and anxiety [3]. We routinely utilize a periprostatic nerve block using 1% lidocaine and the data supports its safety and effectiveness [12]. A VAS score of 1.8 supports our observation that biopsies utilizing a peri-prostatic block are well tolerated and this is in keeping with reports in the literature.

Acute urinary retention (AUR) is usually temporary and occurs in 0.2 to 1.7% of patients following TRUS guided biopsy [3]. Some consideration may be given to pre-medication with an alpha-blocker as there are some data to support this. Bozlu and colleagues, in a randomized study, reported significantly lower rate of LUTS among patients pre-medicated with tamsulosin [13]. There has also been a suggestion that increasing prostate volume may correlate with risk of retention following biopsy [14] although in our study, there was no difference in mean prostate volume between the 15% of patients who experienced an increase in LUTS and those who did not.

It should be noted that mortality following TRUS-guided prostate biopsy is very rare and occurs in 0-1.3% [15,16]. The majority of deaths have been attributed to septic shock. While our study was not powered to detect mortality, the author can recall no death at our institution over the last 5 years and after approximately 1200 biopsies.

5. CONCLUSION

This study demonstrates that prostate biopsy, as currently performed in our unit is well tolerated. Complications associated with biopsy are comparable to rates reported in the international literature.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

DISCLAIMER

Some part of this manuscript was previously presented in the following conference:

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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