Original Article

Hemosepermia after transrectal ultrasound-guided prostatic biopsy: A prospective study

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Abstract

Objectives: Trans-rectal ultrasound (TRUS) is a safe, cost-effective, radiation-free imaging modality for evaluation of prostate. But unfortunately, hemospermia is known to be associated with TRUS–guided prostate biopsy. The aim of this study is to measure the incidence and risk factors of hemospermia in patients undergoing TRUS.

Patients and Methods: A prospective observational study involving patients undergoing TRUS for suspected prostate cancer has been conducted at Al-Hussein and Sayed Galal Hospitals. Forty patients were included in the study.

Results: Most men (90% = 36 patient) undergoing TRUS-guided prostatic biopsy, who were able to ejaculate, experienced hemospermia, which was associated with some degree of anxiety. The mean duration of hemospermia was 4 (±1.4) weeks. The number of ejaculations before the complete resolution of hemospermia was 6 (±5.6). None of the clinical and pathological factors was a significant predictor of the duration of hemospermia.

Conclusion: Patients should be adequately counseled before TRUS-guided prostatic biopsy to avoid anxiety and alterations in sexual activity.

Key Words: Hemosepermia, trans-rectal ultrasound, trostatic biopsy

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INTRODUCTION

Hematospermia (HS) or hemospermia, the presence of blood in the seminal fluid, has been recognized for centuries by those such as Hippocrates, Galen, Pare', Morgagni, Velpeau, Guyon, and Fournier, was first reported in the United States in 1894 by Lydston, and was historically associated with sexual behavior including "unbridled license," excessive overindulgence, prolonged sexual abstinence, or interrupted coitus.[1] Although it is not uncommon to encounter HS in clinical practice, the exact prevalence and incidence are not known.[2] The most common entities that have been reported in men with hemospermia include prior prostatic biopsy, prostatic calculi, benign prostatic hypertrophy and inflammation/infection such as chronic prostatitis or seminal vesiculitis, although the majority of cases are thought to idiopathic in etiology, with the most probable origin occurring in the seminal vesicles.[3] Hemospermia is a well-recognized complication of transrectal ultrasound (TRUS)-guided prostatic biopsy. Although it is classified under minor complications, its persistence causes immense distress to the patient and the partner. In this study we prospectively evaluated patients undergoing prostate biopsy for hemospermia and its complications. (TRUS)-guided

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needle biopsy is the mainstay modality used for the detection of prostate cancer. TRUS-guided sextant biopsy is considered a relatively safe procedure and is usually performed in outpatient settings.[4] Several studies have reported that conventional sextant biopsy, although the number of major complications is not significantly altered.[5,6] Morbidity resulting from TRUS- guided prostate biopsy is significant, as 64-78% of patients experience at least one complication and may require hospitalization for emergent management.[4,6]

PATIENTS AND METHODS

A prospective study involving patients undergoing TRUS-guided prostatic biopsy either for suspicious cancer prostate or for other causes (prostatic cyst, abscess, ejaculatory duct obstruction) over an 8-month period from October 2009 to Jun 2010. The patient age ranged from-55-to 82 years with (mean age-62 years± -.2). Men who were not able to ejaculate were excluded from the study. Men were instructed not to take aspirin or non-steroidal anti-inflammatory agents for at least 5 days before the procedure. After informed consent was obtained, demographic and clinical information were collected through a pre-procedural questionnaire. All patients were started on 3-day course of floroquinolone antibiotic before the procedure. No pre-procedure bowel preparation or cleansing enema was used. The patient was positioned in left lateral decubitus position. A digital rectal examination was performed before the start of the procedure. TRUS was performed with bipolar 7.5 MHZ probe (B and K, Denmark). The prostate volume was calculated with the prostate ellipsoid formula (Volume = 0.52 × length × breadth × height).[2] Prostate gland was examined on longitudinal and sagittal planes for any sonographic abnormalities such as hypo echoic areas. Digital rectal examination was done, if the patient had local anal painful condition (piles, anal fissure, anal stenosis) local xylocaine gel was injected, then 10-ml volume of 1% lignocain was injected into peri-prostatic space under sonographic guidance. Systematic biopsies were performed in the sagittal plane with 18-G biopsy needle driven by a spring-loaded biopsy gun (Bard) under ultrasound guidance. All men had standard peripheral sextant pattern biopsy and two additional cores from the transition zone on each side, making a total of 10 cores.

Any immediate complication after the procedure was recorded. All patients included in the study were encouraged to ejaculate at least once a week either by sexual activity or self-stimulation. The color of the semen was noted as bloody, altered or normal color.

Patients were handed to obtain a validated data on the duration and impact of hemosprmia on emotioms and sexual activity. The anxiety scores were recorded using a visual analog scale (0-no anxiety, 10-extreme anxiety). Patients were followed up at the outpatient clinic regularly every week during the first 8 weeks. Those patients who did not come to the clinic were contacted to complete the follow- up. Relevant clinical and pathological data such as PSA, number of biopsy cores, repeat biopsies and other co morbidities were collected and entered in a database.

RESULTS

Over a period of 8 months, 42 eligible consecutive patients who underwent TRUS-guided prostatic biopsy were included in the study. The mean age was 62.5 (±6) years. Two patients (5%) had positive biopsy for prostate cancer. All men completed the pre-biopsy questionnaire. 26 men (65%) completed the study providing adequate data. 2 patients did not ejaculate, and hence were not included in the analysis. The mean PSA was 7.8 (±) ng/ml. All patients had 10 cores biopsy, except 2 who had two additional cores from sonographically suspicious area. The mean estimated volume of the prostate was 63 (±25) ml. Three men (7.5%) had previously undergone prostate biopsy. No patient had any history of bleeding disorders. None had any history of hemospermia within 1 year before the date of procedure. Twenty-four men ejaculated in the first week. Eighteen of the patients (45%) reported hemospermia during the first week. fourteen of them reported red color of their semen while the remaining 4 reported altered color. During the second week, 8 (20%) reported hemospermia. Two of them reported red color of their semen while the remaining 6 reported altered color. Eleven men, who had blood in the ejaculate during the first week (27.5%), reported no hemospermia in the second week. At the end of 4 weeks, 4 men (10%) had continued abnormal-colored ejaculate. One of them noticed red colored ejaculate while the remaining 3 patients noticed altered color. After 4 weeks, none had red-colored ejaculate and all patients who reported hemosprmia had altered color of semen. At 5 weeks, no patients had any abnormal semen color. Table 1 summarizes the incidence of hemospermia after the biopsy period. The number of ejaculations before the complete resolution of hemospermia was 7 (±5.4). The mean anxiety score was 1.7 (±2.1). Twenty patients (50%) reported less sexual activity due to hemosprmia. However, the anxiety scores and number of ejaculations had positive correlations with the duration of hemospermia.

Table 1: Incidence of hemospermia after TRUS-guided prostatic biopsy

No. of weeks after TRUS-biopsy	Men with hemospermia (%)	Color of ejaculate		Men without hemospermia (%)	Total
		Red	Altered		
1st week	18 (45)	14	4	22 (55)	40
2nd week	8 (20)	2	6	32 (80)	40
3rd week	5 (12.5)	2	3	35 (87.5)	40
4th week	1 (2.5)	0	1	39 (97.5)	40

DISCUSSION

TRUS–guided prostate biopsy has become essential in diagnostic investigation of patients with clinical suspicion of cancer prostate due to gland alterations resulting from abnormality on the digital rectal examination or rising of prostatic- specific antigen (PSA).[7] It is generally well-tolerated, with no sedation, by most men. The reported major complication rate is less than 1% but minor complications are frequent, with 60-79%.[2] These complications include infection, bleeding, pain and vasovagal episodes. Of these, bleeding is the most common complication and usually manifests as hematuria, hematochezia and hemospermia.[2] Hemospermia is defined as the presence of fresh or altered blood in the ejaculate. In most cases, it is caused by nonspecific inflammation of the prostate and seminal vesicles.[8] It causes of great anxiety to men. Occasionally, it may be the sole manifestation of underlying genito-urinary disease.[9] Other causes of hemospermia include glandular or ductal obstruction and hematological abnormalities. However, currently the most common etiology of hemosparmia is iatrogenic.[10] Interventions such as prostate biopsy, radiation therapy to prostate, brachytherapy, and high intensity focused ultrasound therapy, intraprostatic injection of medications and urethral foreign bodies may be associated with hemospermia.[1]

The reported incidence of hemospermia after TRUS-guided prostatic biopsy varies between 5.1% and 89% [Table 2].[3] TRUS-guided prostate biopsy is in general a safe procedure. Aside from infectious complications and pain, the majority of complaints center on the issues of urethral and rectal bleeding, as well as hematospemia. In a contemporary series, Dajanvan *et al.*[11] reported that the morbidity of 1051 patients undergoing a TRUS-guided biopsy was compared with the morbidity of a second biopsy performed in 820 of these patients in whom the initial biopsy results were negative for cancer. Immediate morbidity was minor and included rectal bleeding (2.1% *vs.* 2.4% for the first *vs.* second respectively, $P = 0.09$), and moderate-to–severe vasovagal episodes (2.8% *vs.* 1.4%; $P = 0.03$). Delayed morbidity of first and re-biopsy included fever (2.9% *vs.* 2.3% $P = 0.08$), hematospermia (9.8% *vs.* 10.2%; $P = 0.1$), recurrent mild hematuria (15.9% *vs.* 16.6%; $P = 0.06$), persistent dysuria (7.2% *vs.* 6.8%; $P = 0.12$) and urinary tract infection (10.9% *vs.* 11.3%; $P = 0.07$). Major complications were rare and included urosepsis (0.1% *vs.* 0) and rectal bleeding that required intervention (0 *vs.* 0.1%).

The reason for the wide range in the incidence of hemospermia may be multifactorial. Many of studies did not eliminate the patients who not able to ejaculate. This could have contributed to a false low-incidence of this complication. In addition, the reported incidence of hemospermia in many of the retrospective studies,[12,13] this may well be due to recall bias and insufficient data collection in retrospective studies. In most series, the proportion of men ejaculated before the follow-up interview was not available and this could reflect on the true incidence of this complication. Moreover, few investigators considered hemospermia as a delayed complication and recorded only men with persistent hemospermia as an adverse event.[16] In our study, the incidence of hemopsermia was 45% in the first week after biopsy. Elimination of patients who were not able to ejaculate and emphasis on hemosprmia during counseling could have attributed to the high reporting of this complication.

The anxiety scores due to hemospermia were low in our study. Pre biopsy counseling with reassurance could have affected the true anxiety levels. In our study, 50% of men said that they had less than normal sexual activity due to hemosprmia during the first 8 weeks of post-biopsy period. The mean duration of spontaneous resolution of hemospermia was 2 weeks. De la Taille *et al.*[17] reported 12.8 days as the mean duration of spontaneous resolution of hemospermia. Rodriguez *et al.*[21] observed persistent hemosprmia over a month in 10 % of men

Table 2: Incidence of hemospermia in various series

References	Stratification based on	No. of patients	No. of hemospermia	% of hemospermia
Djanvan *et al.*[11]	First biopsy	1051	103	9.8
	Repeat biopsy	820	84	10.2
Naughton *et al.*[12]	6 cores	68	48	71
	12 cores	57	57	89
Makinen *et al.*[13]	Screening	97	54	52
	Referral	84	54	45
Ghani *et al.*[14]	6 cores	307	41	13
	8 cores	325	52	16
	12 cores	128	15	12
Rietbergen *et al.*[15]		1687	756	45.3
Wammack *et al.*[16]		59	6	11
De la Taille *et al.*[17]		303	182	60
Collins *et al.*[18]		89	25	28.1
Aus *et al.*[19]		391	36	9.0
Torp-Pederson *et al.*[20]		138	7	5.1
Rodriguez *et al.*[21]		127	11	9.5
Present study		40	18	45

after TRUS-guided prostate biopsy. Naughton *et al*.[12] showed significantly higher incidence of hemosprmia with 12 cores (89%) biopsy when compared with six core (71%) technique. In contrast, DeLa Taille *et al*.[17] studied 303 patients with 21 core biopsy and reported 60% hemosprmia and hematuria were less frequently seen in men with prostate cancer in the biopsy specimen. This phenomenon remains uncertain and it is not reproduced in any other study. There is no proven increase in hemorrhagic complications with aspirin or other non-steroidal anti-inflammatory drug use.[21] In our study none of the clinical and pathological character was able to predict the incidence or duration of hemospermia, which may be a simple analytical correlation.

In summary, hemospermia is a frequent complication of TRUS-guided prostatic biopsy. Hemospermia following TRUS-guided prostatic biopsy, is mostly self-limiting. This symptom may result in significant patient and partner anxiety. Therefore patients should be counseled about this complication adequately. We recognized that there are few limitations to this study. Although the study is prospective in nature, it was not stratified to evaluate the impact of co-morbidities. The pre-biopsy counseling on complications with more emphasis on hemospermia would have reduced the threshold for reporting this complication. More detailed randomized large sample prospective trials are necessary to validate the incidence of hemospermia.

CONCLUSIONS

TRUS-guided prostate biopsy is a safe and well-tolerated office procedure for diagnosis of prostate cancer. Most complications of this procedure are mild and self-limiting. Most men (45%) undergoing TRUS-guided prostate biopsy, who are able to ejaculate, will experience hemospermia, which is associated with some degree of anxiety and impact on sexual activity. Patients should be adequately counseled before TRUS-guided prostate biopsy to avoid undue anxiety and alterations in sexual activity.

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