

Can Pain During Digital Rectal Examination Help us to Decide the Necessity and the Method of Anesthesia for Transrectal Ultrasound Guided Prostate Needle Biopsy?

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ABSTRACT

Objective: Transrectal ultrasound (TRUS) guided prostate biopsy is well tolerated by patients but the lack of an effective marker to predict pain prevents us from determining pre-procedurally which patient group needs local anesthesia for biopsy and probe pain. Thus in this study, we investigated predictor factors for prostate biopsy and probe insertion pain. *Materials and Methods:* 71 patients who were undergoing prostate biopsy without anesthesia were included in the study retrospectively. Pain had been assessed with visual analogue scale (VAS 0-10). Digital rectal examination (DRE) pain was analyzed for biopsy and probe insertion pain.

Results: DRE pain was related to both probe pain and biopsy pain.

Conclusion: Although level of pain during DRE determines patients in need of local anesthesia, since the number of patients with moderate-severe pain is rather big, it seems efficient in determining the patients in need of additional anesthesia due to probe pain.

Key words: prostate biopsy; pain; predictive factors; digital rectal examination

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INTRODUCTION

Transrectal ultrasound (TRUS) guided needle biopsy is a standard method used in the diagnosis of prostate cancer. Generally, only 15 to 25% of the patients feel severe pain during this procedure applied in outpatient clinic conditions (1-4). Also, lack of an effective marker for the prediction of pain prevents us from determining pre-procedurally which patient group needs local anesthesia (3).

The pain felt during biopsy has been attributed to probe insertion and needle punctures into the prostate. Twenty seven percent of the patients felt

pain due to probe insertion as bad as or worse than needle biopsies themselves in literature (5). Therefore, prevention of probe pain together with needle pain is required in many patients. However, since the periprostatic nerve blockade is ineffective on probe insertion pain (6), the determination of patients in need of additional anesthesia becomes important. Unfortunately, there is no effective marker in literature for predicting in which patients' severe probe insertion pain will occur.

Pain score during digital rectal examination (DRE) can be used in determining rectal sensitivity and pain sensitivity. While DRE increases the

magnitude of pain and unpleasantness due to rectal volume and pressure (7), we expected more rectal pain with probe insertion than with digital rectal examination. In addition, since the decision for prostate biopsy is made based on DRE, performing a query during DRE to predict the biopsy pain does not cause extra morbidity.

In this study, we evaluated correlation between probe, biopsy pain to digital rectal examination pain. Furthermore, we investigated the predictive value of the pain during DRE to determine patients in need of additional anesthesia due to probe insertion pain.

MATERIALS AND METHODS

This retrospective study was designed using our 71 patients who were undergoing prostate biopsy without anesthesia because of abnormal DRE or > 4 ng/mL PSA level. The same doctor performed digital rectal examination before the biopsy with the accompaniment of TRUS as the standard, and pain score was evaluated with visual analogue scale (VAS 0-10).

The experienced urologist evaluated with TRUS, and at least six core biopsies were taken simultaneously. It was first biopsy for all patients. A Hitachi EUB-400 ultrasonography device and 6.5 MHz transrectal probe were used in TRUS. The biopsy procedure was performed with the patient lying in left lateral decubitus position. Pain was assessed with VAS for probe and biopsy. Antibiotics prophylaxis

was performed with ciprofloxacin 500 mg twice a day for 5 days starting from the day before the biopsy. After the biopsy, patients were asked whether they would accept the biopsy under the same conditions or not.

All statistical evaluations were done by SSPS 10.0 package program. All the data are given as mean \pm standard deviation. Spearman correlation was used to show the relation of pain with parameters. We used the chi square test and Fischer's Exact Test, student-t test for parameter's analysis. In our statistics $p < 0.05$ was considered statistically significant.

RESULTS

Patient characteristics are summarized in Table-1. Prostate cancer was determined in 10 patients (14.8%). Pain was moderate-severe (VAS > 4) for 23 patients (32.4%) at probe insertion and 41 patients (57.75%) at prostate needle biopsy. Because of severe pain at biopsy, we paused it for 9 patients (12.7%). While 96.8% of patients (1/23) without moderate-severe pain (VAS \leq 4) accepted biopsy under same conditions, 51.2% of the patients (21/41) with moderate-severe pain stated that they would not accept repeat biopsy without additional anesthesia. Complications requiring hospitalization developed in none of the patients.

Digital rectal examination pain has correlation with probe and biopsy pain ($p < 0.001$). While mean VAS value was 2.46 ± 1.7 for probe insertion and 3.67 ± 2.17 for biopsy when DRE VAS value was

Table 1 – Characteristics of 71 patients.

	Mean \pm SD	Median	Range
Age	65.9 \pm 7.64	67	42 - 84
Volume	53.15 \pm 24.67	47	21 - 32
Total PSA	13.9 \pm 13.29	9.15	1.66 - 68.6
PSA density	0.31 \pm 0.19	0.19	0.05 - 2.77
VAS DRE	2.59 \pm 1.84	2	0 - 7
VAS probe	3.66 \pm 2.39	3	0 - 9
VAS biopsy	4.96 \pm 2.56	5	0 - 10

VAS = visual analogue scale; DRE = digital rectal examination; SD = standard deviation.

less than 3, it was 4.97 ± 2.35 and 6.36 ± 2.2 for DRE VAS value 3 and over. Statistically significant differences were found in DRE pain for probe and biopsy pain ($p < 0.001$).

While moderate-severe biopsy pain was two-fold in patients that DRE pain was greater than 2 as compared to those with DRE pain was 2 or less, moderate-severe probe pain was about four-fold greater (statistically significant, $p < 0.01$), Table-2.

COMMENTS

Local anesthesia during biopsy has been widely used together with developing techniques in recent years. It has not also been very clear which patients should receive local anesthesia. In addition, the periprostatic blockade used widely in biopsy is not useful in preventing the pain arising from probe insertion, and this makes it important to determine the patients in need of local anesthesia for probe insertion (6). Therefore, we investigated the relation of digital rectal examination pain with the pain during biopsy.

Anesthesia is being routinely performed for patients in our clinic during biopsy, since the benefits of needle biopsy accompanied by periprostatic anesthesia has been shown in various placebo-controlled, randomized prospective studies (6,8,9). Therefore, we included in this study patients that previously constituted the control group.

Since 51.2% of the patients with $VAS \geq 5$, and 3.2% of the patients with < 5 stated that they would not accept repeat biopsy without additional anesthesia we took the threshold value of VAS for

patients requiring additional anesthesia as 5. We found the number of patients in need of anesthesia greater than that found by Bastide et al. in our study (%31-%15) (3). Such fact can be related to different patient groups.

The severe pain level during biopsy in patients who did not receive anesthesia is reported of approximately 20% in literature (1,2). Also, the number of patients with $VAS \geq 5$ is controversial in studies on pain scoring. Irani et al. reported 16% before local anesthesia was introduced to clinical use, while Bastide et al. reported this ratio 54% after (1,4). Our study was consistent with the study of Bastide et al.

To the best of our knowledge, we investigated the role of DRE pain in the prediction of biopsy pain for the first time in literature.

It was found that pain during DRE was related to probe insertion and biopsy pain in univariate analysis. While moderate-severe pain in biopsy was 37.8% when DRE VAS value was less than 3, it was 79.4% when it was 3 and over. Being the ratio of moderate-severe pain 57.7% in this study, it reduces the clinical use of DRE pain for the prediction of biopsy pain. More significant results can be obtained from different patient populations. However, according to our results, moderate-severe pain occurs in about 40 % of the patients even when DRE pain is less than 3, therefore, applying local anesthesia to all the patients before biopsy seems to be a good alternative.

Together with this, a more distinctive clinical relationship between DRE and probe insertion pain has been noted. When the DRE VAS value is less than 3, 13.5% of patients feel moderate-severe probe

Table 2 – Relation between pain on digital rectal examination (DRE) and probe and biopsy.

	VAS Probe 0-4	VAS Probe 5-10	VAS Biopsy 0-4	VAS Biopsy 5-10	
VASDRE 0-2	32 (45.1%)	5 (7%)	23 (32.4%)	14 (19.7%)	37
VASDRE 3-10	16 (22.5%)	18 (25.4%)	7 (23.3%)	27 (38%)	34
	48	23	30	41	71

VAS = visual analogue scale; N% = percentage of the total of patients.

pain, while 52.94% of patients feel moderate-severe pain for values 3 and over. Feeling moderate-severe probe insertion pain of about 4 times for values 3 and over allowed us to determine the patients in need of anesthesia for probe insertion pain.

As a result, the level of pain during DRE appears to be effective in determining the patients in need of additional anesthesia for probe insertion pain, rather than determining patients in need of local anesthesia. Applying pudendal nerve blockade, 40% DMSO with lidocaine intrarectal gel or topical anesthesia with prilocaine-lidocaine cream to prevent probe insertion pain in such patients seems to be a good approach (10-12).

CONFLICT OF INTEREST

None declared.

REFERENCES

- Collins GN, Lloyd SN, Hehir M, McKelvie GB: Multiple transrectal ultrasound-guided prostatic biopsies—true morbidity and patient acceptance. *Br J Urol.* 1993; 71: 460-3.
- Crundwell MC, Cooke PW, Wallace DM: Patients' tolerance of transrectal ultrasound-guided prostatic biopsy: an audit of 104 cases. *BJU Int.* 1999; 83: 792-5.
- Bastide C, Lechevallier E, Eghazarian C, Ortega JC, Coulange C: Tolerance of pain during transrectal ultrasound-guided biopsy of the prostate: risk factors. *Prostate Cancer Prostatic Dis.* 2003; 6: 239-41.
- Irani J, Fournier F, Bon D, Gremmo E, Dore B, Aubert J: Patient tolerance of transrectal ultrasound-guided biopsy of the prostate. *Br J Urol.* 1997; 79: 608-10.
- Luscombe CJ, Cooke PW: Pain during prostate biopsy. *Lancet.* 2004; 363: 1840-1.
- Inal G, Yazici S, Adsan O, Ozturk B, Kosan M, Cetinkaya M: Effect of periprostatic nerve blockade before transrectal ultrasound-guided prostate biopsy on patient comfort: a randomized placebo controlled study. *Int J Urol.* 2004; 11: 148-51.
- Kwan CL, Mikula K, Diamant NE, Davis KD: The relationship between rectal pain, unpleasantness, and urge to defecate in normal subjects. *Pain.* 2002; 97: 53-63.
- Ozden E, Yaman O, Gogus C, Ozgencil E, Soygur T: The optimum doses of and injection locations for periprostatic nerve blockade for transrectal ultrasound guided biopsy of the prostate: a prospective, randomized, placebo controlled study. *J Urol.* 2003; 170: 2319-22.
- Berger AP, Frauscher F, Halpern EJ, Spranger R, Steiner H, Bartsch G, et al.: Periprostatic administration of local anesthesia during transrectal ultrasound-guided biopsy of the prostate: a randomized, double-blind, placebo-controlled study. *Urology.* 2003; 61: 585-8.
- Kravchick S, Peled R, Ben-Dor D, Dorfman D, Kesari D, Cytron S: Comparison of different local anesthesia techniques during TRUS-guided biopsies: a prospective pilot study. *Urology.* 2005; 65: 109-13.
- Adsan O, Inal G, Ozdogan L, Kaygisiz O, Ugurlu O, Cetinkaya M: Unilateral pudendal nerve blockade for relief of all pain during transrectal ultrasound-guided biopsy of the prostate: a randomized, double-blind, placebo-controlled study. *Urology.* 2004; 64: 528-31.
- Raber M, Scattoni V, Roscigno M, Rigatti P, Montorsi F: Perianal and intrarectal anaesthesia for transrectal biopsy of the prostate: a prospective randomized study comparing lidocaine-prilocaine cream and placebo. *BJU Int.* 2005; 96: 1264-7.

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EDITORIAL COMMENT

Kaygisiz et al. have retrospectively analyzed the accuracy of pain on digital rectal examination (DRE) in predicting prostate biopsy / probe introduction pain. They use an 11-point visual analogue pain scale. The retrospective nature of this study is a significant flaw. However, it is a well-written paper.

The use of peri-prostatic nerve block (PPNB) had been introduced as early as 1996 (1) for minimizing prostatic biopsy pain with lignocaine local anesthesia. Many studies have evaluated and conclusively proved the benefit of PPNB (2-4). I dispute the necessity to assess whether patients require anesthesia for prostatic biopsy. The authors do concur that in modern urological practice, most urologists would offer patients some form of analgesia prior to prostatic biopsy. In fact, I think most urologists would be hard pressed to offer patients prostatic biopsy without anesthesia. I feel that most of us do not appreciate the extent of pain that patients have during biopsy.

Recent studies have found that older men had a lower perception of pain on biopsy (5). This could be because they may have a decreased anal tone enabling easier probe introduction and lesser pain perception (6). The authors have not explained the reasons why they think patients with more DRE pain perceive more probe pain.

The authors report of 34% of their study group considering refusing to undergo a repeat biopsy. This is especially poignant as the cancer detection rate is only 18.5%. More than 80% of the patients would have to be considered for a repeat biopsy. Initial analgesia would have made the experience tolerable and a patient population more conducive to urological advice. The authors may need to reassess their biopsy protocol, as the cancer detection rate is low.

This article has raised an important point in identifying a sub-group of patients who are at higher risk of significant procedure pain. These patients

should be offered analgesia in addition to the PPNB such as perianal analgesia and maybe even sedation (7).

Overall, the authors have reported on the need for analgesia in prostate biopsy; a subject that I feel may already be a foregone conclusion (8).

REFERENCES

1. Nash PA, Bruce JE, Indudhara R, Shinohara K: Transrectal ultrasound guided prostatic nerve blockade eases systemic needle biopsy of the prostate. *J Urol.* 1996; 155: 607-9.
2. Soloway MS, Obek C: Periprostatic local anesthesia before ultrasound guided prostate biopsy. *J Urol.* 2000; 163: 172-3.
3. Alavi AS, Soloway MS, Vaidya A, Lynne CM, Ghelief EL: Local anesthesia for ultrasound guided prostate biopsy: A prospective trial comparing 2 methods. *J Urol.* 2001; 166: 1343-5.
4. Pareek G, Armenaskas NA, Fracchia JA: Periprostatic nerve blockade for transrectal ultrasound guided biopsy of the prostate: a randomized, double-blind, placebo controlled study. *J Urol.* 2001; 166: 894-7.
5. Djavan B, Waldert M, Zlotta A, Dobronski P, Seitz C, Remzi M, et al.: Safety and morbidity of first and repeat transrectal ultrasound guided prostate needle biopsies: results of a prospective European prostate cancer detection study. *J Urol.* 2001; 166: 856-60.
6. Philip J, McCabe JE, Dutta Roy S, Samsudin A, Campbell IM, Javlé P: Site of local anaesthesia in transrectal ultrasonography-guided 12-core prostate biopsy: does it make a difference? *BJU Int.* 2006; 97: 263-5.
7. Parr NJ, Philip J: The need to reduce patient discomfort during transrectal ultrasonography-guided prostate biopsy: what do we know? *BJU Int.* 2006; 97: 652.
8. Soloway MS: Do unto others — why I would want anesthesia for my prostate biopsy. *Urology.* 2003; 62: 973-5.

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EDITORIAL COMMENT

The authors suggest that the discomfort related to a digital rectal examination (DRE) is an indicator of which men will have more severe pain during transrectal ultrasound (TRUS) probe insertion and thus raise the question as to whether they should have additional analgesia or even sedation in order to minimize the discomfort or pain during the entire procedure. I would certainly agree with the authors that we should strive to minimize pain associated with any procedure we perform. A prostate biopsy session ranks at or near the top of procedures which urologists perform in the office and which can cause pain. Some of the others are urethral dilatation, fulguration of bladder tumors, and vasectomy. In each case we weigh patient discomfort against patient inconvenience, cost, and safety. In the US the cost of a procedure rises dramatically when we move from the office to a surgical facility. Thus the introduction of an anesthesiologist to administer sedation increases the cost appreciably. Even the process of intravenous sedation in the office adds additional requirements such as monitoring duration. This would likely also prohibit the patient from driving home alone after the procedure. Oral surgeons and some dentists have mastered the use of sedation, urologists have not. Most urology offices are simply not equipped for this. A brief history of the periprostatic nerve block specifically associated with a TRUS prostate biopsy session might be useful. K. Shinohara is a member of the faculty in the Department of Urology at University of California, San Francisco. He adapted the technique of anesthetizing the prostate described by Reddy (1) in 1990 to another type of prostate procedure, TRUS biopsy. Nash et al. published their results outlining for the first time the procedure of prostatic nerve blockade for prostate biopsies under TRUS guidance in 1996 (2). Evidently not many urologists read the article or realized that there was a better way of performing TRUS biopsies. Men were certainly being subjected to at best an uncomfortable procedure and at worst a very painful one in which many became diaphoretic and begged the urologist to limit the number of biopsies. I was among the uninitiated until one day in 1999 I

mentioned to Can Obek, a fellow in our department in Miami, that there must be a way to reduce the amount of pain from this procedure. He recalled a presentation he heard in Turkey that was virtually identical to what Shinohara had reported (3). I immediately obtained the spinal needles and modified the technique to target 3 locations along each side of the prostate. There was no doubt the amount of pain was much reduced. We submitted our findings to the *Journal of Urology* and thanks to the then Editor, Jay Gillenwater, the manuscript was published in January 2000 (4). This time the technique did not go unrecognized. We followed with the results of a prospective randomized trial comparing our initial observations with a peri-prostatic nerve block (PPNB) to control group (5). There have been several accounts summarizing the results of many randomized trials and they indicate the efficacy and safety of the PPNB (6-7). This should be offered to every one of the estimated 1 million men who undergo a prostate biopsy each year in the US alone.

There are means to further allay patient anxiety and discomfort associated with this procedure. This is particularly important as we no longer perform 6 or even 8 biopsies but often 10 or even 12. Recent papers have outlined these methods (8) and we should find the ones that in addition to the PPNB reduce the discomfort associated with this procedure.

REFERENCES

1. Reddy PK: New technique to anesthetize the prostate for transurethral balloon dilatation. *Urol Clin N Amer.* 1990; 17: 55-6.
2. Nash PA, Bruce JE, Indudhara R, Shinohara K: Transrectal ultrasound guided prostate nerve blockade eases systematic needle biopsy of the prostate. *J Urol.* 1996; 155: 607-9.
3. Onder AU, Citci A, Yaycioglu O: To what degree prostatic nerve blockade improve patient tolerance in transrectal ultrasound guided systematic biopsy. *Turk Uroloji Dergisi.* 1998; 24: 324-9.
4. Soloway MS, Obek C: Periprostatic local anesthesia before ultrasound guided prostate biopsy. *J Urol.* 2000; 163: 172-3.

5. Alavi AS, Soloway MS, Vaidya A, Lynne CM, Gheiler EL: Local anesthesia for transrectal ultrasound guided prostate biopsy: a prospective randomized trial comparing two methods. *J Urol.* 2001; 166: 1343-5.
6. Autorino R, De Sio M, Di Lorenzo G, Damiano R, Perdona S, Cindolo L, et al.: How to decrease pain during transrectal ultrasound guided prostate biopsy: a look at the literature. *J Urol.* 2005; 174: 2091-7.
7. Hergan, L., Kashefi, C. Parsons, JK: Local anesthetic reduces pain associated with transrectal ultrasound guided prostate biopsy: a meta analysis. *Urology.* 2007; 69: 520-5.
8. De Sio M, D'Armiento M, Di Lorenzo G, Damiano R, Perdona S, De Placido S, et al.: The need to reduce patient discomfort during transrectal ultrasonography guided prostate biopsy: what do we know? *BJU Int.* 2005; 96: 977-83.

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