

Full Length Research paper

The relation of pain with geographical location in Turkey in transrectal ultrasonography-guided prostate biopsy

Metin İshak Öztürk¹, Orhan Koca¹, Eyüp Veli Küçük¹, Muzaffer Oğuz Keleş¹, Mustafa Güneş¹,
Muhammet İhsan Karaman¹

¹Haydarpasa Numune Training and Research Hospital, Department of Urology

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In this study, the relationship of patient tolerance in transrectal ultrasonography (TRUS) guided prostate biopsies, with geographical location in Turkey was evaluated. One hundred sixty-two patients with a mean age of 67.9 years (range, 46-82 years) who underwent TRUS-guided prostate biopsies in our clinic were examined. The Visual Analog Scale (VAS) was used as the tolerance assessment criterion. The mean pain scores according to regions were as follows: Black Sea region, 4.9; East Anatolian region, 3.6; Central Anatolian region, 3.6; Marmara region, 2.2; Aegean region, 1.9; Mediterranean region, 1.5; and Southeast Anatolian region, 1.4. The mean pain score of patients from the Black Sea region was significantly higher than the other regions; whereas the mean pain scores of patients in the East and Central Anatolian regions were significantly higher than the other regions, except Black Sea region. The difference patient tolerance and age were not statistically significant. The geographical locations of the patients were shown to affect the pain levels significantly, in TRUS-guided prostate biopsies. In case the results of the present study are confirmed in large-scale studies, it may be beneficial to consider this issue in counseling the patients undergoing prostate biopsies.

Key words: Prostate biopsy, pain, age, geographical region, TRUS

INTRODUCTION

Transrectal ultrasonography (TRUS)-guided prostate biopsy is currently considered as the gold standard diagnostic technique in prostate cancer (Isen et al., 1998).

Despite important variations observed in the transrectal prostate biopsy techniques within the years, such as the biopsy core rate and ultrasonographic-guidance, there is no standard opinion as to the alleviation of pain and discomfort experienced by the patient during the procedure (Holm and Gammelgaard, 1981). Biopsy technique improved with time, although at first there were arguments about using analgesic and anesthetic drugs before biopsy, today these drugs are used by many urologists (Kaygisiz et al., 2007). 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 (Kaygisiz et al., 2007). Reports from various studies have demonstrated that 8% of prostate biopsies in the UK and 11% in the USA are performed with local anesthetics (Patel et al., 2003). However, there are also studies reporting a significant degree of pain and discomfort during the procedure (Crundwell et al., 1999). It is very difficult to predict the patients who will experience a clinically important level of pain and discomfort during the procedure.

Studies have demonstrated that the pain level experienced by the patient after a standard stimulus is affected by different variables, including ethnic origin and nerve conduction velocity (McGrath, 2006; Clark and Clark, 1980). Similarly, the pain and feelings of discomfort experienced during prostate biopsies are due to various factors (Avci, 2003). In this study, we determined the relationship of pain scores with the patient age and geographical location in TRUS-guided prostate biopsies.

*Corresponding author E-mail: drorhankoca@hotmail.com

Table 1. Mean ages and VAS scores of the patients according to regions

Region	N	Age Mean	Age Std. dev	VAS Mean	VAS Lowest	VAS Highest	VAS Std.dev.
Black Sea Region	23	66.8	8.1	4.91	3	8	1.4
East Anatolian Region	26	68.7	9.3	3.62	2	6	1.1
Central Anatolian Region	24	70.2	9.7	3.58	0	6	1.2
Marmara Region	21	69.2	7.2	2.19	0	4	1.3
Aegean Region	20	69.2	8.1	1.90	0	4	1.3
Mediterranean Region	19	65.0	9.4	1.53	0	3	1.1
Southeast Anatolian Region	29	65.6	10.8	1.41	0	3	1.0
Total	162	67.9	8.3	2.76	0	8	1.7

VAS: Visual Analog Scale

MATERIALS AND METHODS

In our prospective study, 162 patients with a mean age of 67.9 years (range, 46–82 years), who underwent TRUS-guided prostate biopsy were examined. All of the patients could understand and write Turkish fluently. Oral quinolone antibiotics were initiated 12 hours prior the procedure, and were continued for 4 days, after the procedure. Bowel preparation was performed with enema a day before the biopsy.

Birth places of all patients who were planned to have biopsy were recorded, patients who spent more than half of their lives in their birth places were included to study and after “TRUS guided prostate biopsy” VAS scores were evaluated according to these regions. Ethical permission for the study was granted by the local ethical committee and informed consent was signed by the all patients.

The biopsy procedure was performed in the left lateral decubitus position, with an 18-gauge Tru-cut automatic biopsy attachment, guided by a 7 MHz transrectal ultrasound probe. All procedures were performed by same physician. A total of eight biopsies, four from each right and left peripheral zones of the prostate, were obtained from all patients. Lidocaine gel (10cc) was applied before the biopsy procedure. Patients, who required more than eight core biopsies, those with additional rectal or anal disease, and those with repeated biopsies, were excluded from the study.

The Visual Analog Scale (VAS) was used 30-60 minutes after the procedure in order to evaluate the pain levels so we evaluated the pain both during probe insertion and needle penetration. The scores of the scale ranged from 0 to 10. Appropriate extreme definitions for the perception of pain, i.e. 0=no pain, 10=unbearable pain, were written-out at both ends of a 100 mm-line, then the patients were required to determine the point considered to be appropriate for their condition. The results were evaluated using one-way ANOVA and the Tukey's *post-hoc* test. Significance level was accepted as $p < 0.05$.

RESULTS

A total of 162 patients, between the ages of 46 and 82 years (mean 67.9+8.27) were included in the study. The number of patients and the mean pain scores according to regions were as follows: Black Sea (n=23), 4.9; East Anatolian (n=26), 3.6; Central Anatolian (n=24), 3.6; Marmara region (n=21), 2.2; Aegean (n=20), 1.9; Mediterranean (n=19), 1.5; and Southeast Anatolian region (n=29), 1.4 (Table 1). The groups were

homogeneous in terms of age ($p=0.32$). The lowest and the highest VAS scores measured were 0 and 8, respectively.

The mean pain score of patients from the Black Sea region was significantly higher than the mean scores of the all other geographic regions ($p=0.001$). No significant difference was observed between the pain scores of patients from the Eastern and Central Anatolian regions ($p=0.34$); however, the pain scores of these two regions were significantly higher than the other geographic regions ($p=0.04$), except Black Sea region. The difference between the Marmara, Aegean, and Southeast regions was not statistically significant ($p=0.46$). The difference patient tolerance and age were not statistically significant ($p=0.17$).

DISCUSSION

TRUS-guided prostate biopsy, one of the most important diagnostic methods in urology, has been widely used for the diagnosis of prostate cancer since 1981 (Holm and Gammelgaard, 1981). The discomfort and pain experienced by the majority of patients during the procedure is an important cause for concern (Clements et al., 1993; Collins et al., 1993). A great number of patients have emphasized that the most commonly encountered discomfort with TRUS-guided prostate biopsy is the distension in the anus during the insertion of the ultrasound probe into the rectum (Gürdal et al., 2003). Local anesthesia and sedatives, such as midazolam, procedures involving caudal anesthesia, and periprostatic anesthesia, have been employed in order to alleviate pain and the feeling of discomfort experienced during TRUS-guided prostate biopsy. Indeed, positive effects on patient tolerance have been reported with these measures (Soloway and Öbek, 2000).

Recently it has been stated that the administration of the appropriate and adequate analgesia is an important patient right, and is considered during the evaluation of hospital accreditations (Berry and Dahl, 2000). However, many studies have shown that patients from different

cultural backgrounds or minorities do not obtain adequate pain therapy (Johnson, 1998; Lasch, 2000). In Turkey, people with different cultural background live in different geographical regions. This might be one of the reasons why we obtained the different pain scores in our study.

The pain experienced even during standard medical interventions shows great variations, demonstrating that there exists certain determining factors, and the standard pain therapy is inadequate for individual patient. Demographic factors, such as age, gender, socioeconomic status, race, and ethnic origin of the patients have been shown to affect tolerance and response to pain (Avcı et al., 2003). In a study conducted in Australia involving 72 individuals, the sensation of pain was shown to be affected by cultural differences, and the pain threshold was reported to be higher among the Aborigines than the individuals from the other communities (Crundwell et al., 1999). Experimental pain studies also support these findings, demonstrating that the pain threshold differs in individuals from different races or ethnic groups. Chapman and Jones demonstrated that the heat pain threshold was lower among African Americans, compared to whites (McGrath, 2006). Clark *et al.* demonstrated that the electrical pain threshold of Nepalese workers was higher than those in the West (Clark and Clark, 1980). However, there are studies which also demonstrate that ethnic origin is not effective in the perception of pain (Tan et al., 2008; Edwardset al., 2005). Although our study was not an experimental study, we obtained pain scores varying in a wide range after TRUS-guided prostate biopsy, which is considered to be a standard procedure.

Since pain is a subjective sensation, a healthy communication between the physician and the patient is one of the most important necessities for the provision of adequate pain therapy. There are studies which have demonstrated that appropriate pain therapy may not be provided when patients and physicians do not speak the same language (Green et al., 2003). All of the patients in our study could understand and speak our language fluently. However, Cooper-Patrick *et al.* (Cooper-Patrick et al., 1999) demonstrated that even in cases in which the patients and physician spoke the same language, patients participated more effectively in the management of pain therapy when the physician and the patient were both from the same ethnic background. In this study, these factors were not taken into consideration during the evaluation, considering the fact that a differentiation of ethnic origin cannot always clearly be made in our country. The pain scores observed in the present study vary between geographic regions, with the VAS score of the Black Sea region being significantly higher than the mean scores of all the other regions. There was no significant difference between the VAS scores obtained in Central Anatolian and Eastern Anatolian regions; however, the VAS scores of these two regions were

significantly higher than all the other regions, except the Black Sea region.

In a study conducted by Weisse et al., it was demonstrated that the dose of the analgesic that was administered differed between male and female physicians during pain therapy (Weisse et al., 2001). In our study analgesic treatment of all patients were planned by one doctor (male). Schulman *et al.* also demonstrated that race and gender of the patient were independent variables concerning pain therapy (Schulman et al., 1999). These studies also demonstrated that treatment may be subjective, as well as the pain sensation. It is thus important to take this fact into consideration when planning pain management.

Visual Analog Scale is a widely used method to convert subjective measures into numeric values for many years and globally accepted in the literature. It is a safe and an easy method to use (Wewers and Lowe, 1990). This procedure has been reported to be successful in objectively measuring the experienced discomfort (Mueller et al., 2000). VAS, widely used in the evaluation of pain and discomfort experienced during TRUS-guided prostate biopsy, is a sensitive method which is easily understood and applied in elderly patients (De Sio, 2005). No problem was encountered during the application of VAS and no patient was excluded from the study due to incompliance.

Due to the extensive use of prostate-specific antigen (PSA) and its derivatives in daily clinical practice, the number of patients undergoing TRUS-guided prostate biopsy is on the rise. The development and standardization of the TRUS-guided prostate biopsy method has not been completed yet. In the present study, it was observed that the level of pain experienced during TRUS-guided prostate biopsy has been affected by the geographic location of the patient. Age has also been shown to affect pain perception; however, no statistical difference was detected. Our study includes small number of patients and this may be the reason for this condition.

It would be beneficial to consider individual differences when determining the method and dosage of anesthesia in patients scheduled to undergo a prostate biopsy, by supporting these results with more extensive studies.

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