Anorektal hastalığı olan hastalarda transrektal prostat biyopsisi için yapılan kaudal blok ve intrarektal jel anestezilerinin etkinliğinin karşılaştırılması

Comparison of the caudal block anesthesia and ıntrarectal gel anesthesia for transrectal prostate biopsy in patients with anorectal disorders

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Özet

Giriş: Anorektal hastalığı olan TRUS eşliğinde prostat biyopsisi yapılan hastalarda kaudal blok ve intrarektal jel anestezisinin analjezik etkinliğini karşılaştırdık.

Gereç ve Yöntemler: Çalışmaya anorektal hastalığı olan ve TRUS eşliğinde biyopsi yapılan toplam 100 hasta alındı. Kaudal grupta 15 ml lidocaine (%1 lidocaine) kaudal boşluğa uygulandı (50 hasta) ve intrarektal grupta prostat biyopsisinden 15 dakika önce 15 cc %2 lidocaine jel intrarektal olarak uygulandı (50 hasta). Anestezi işlemi sırasında, prob yerleştirme sırasında ve prostat biyopsisi sırasında ağrı skorunun ölçmek için hastanın kendi yaptığı visual analog skala (VAS) uygulandı.

Bulgular: Prob yerleştirme sırasında ve prostat biyopsi sırasında ölçülen ortalama VAS skorları Grup 1'de Grup 2'ye göre daha düşüktü ($p<0.05$). Grup 1 ve Grup 2 arasında, anestezi sırasında, prob yerleştirme sırasında ve prostat biyopsisi sırasında ortalama VAS skorları sırasıyla (2.72±1.29 (1-5) ile 1.46±0.67 (1-3), $p<0.05$), (2.00±1.03 (0-4) ile 2.50±0.64 (2-4), $p<0.05$), ve (2.02±0.93 (1-4) ile 3.60±0.83 (3-6), $p<0.05$), olarak saptandı.

Sonuç: Kaudal blok anestezisinin anorektal hastalığı olan hastalarda prob yerleştirme sırasında ve prostat biyopsisi sırasında ağrıyı azaltmada intrarektal jel uygulamasına göre daha üstün olduğu saptandı.

Anahtar Kelimeler: Kaudal blok, intrarektal jel, prostat biyopsisi, visuel analog skala.

Abstract

Objective: We compared the analgesic efficacy of the caudal block anesthesia and intrarectal gel anesthesia for TRUS-guided prostate biopsy in patients with anorectal disorders.

Materials and Methods: A total of 100 patients which had anorectal disorders undergoing biopsy were entered into this study. 15 ml of lidocaine (1% lidocaine) was into the caudal space in caudal group (first 50 patients) and 15 cc 2% lidocaine gel were applied intrarectally in intrarectal gel group (last 50 patients) 10 minutes before the prostate biopsy. A self-administration visual analogue scale (VAS) was used to assess the pain score during anesthesia, during probe insertion and during prostate biopsy.

Results: The mean VAS score during the probe insertion and during the prostate biopsies is lower in group 1 than group 2, ($p<0.05$). The mean VAS score during the anesthesia, probe insertion and prostate biopsy in group 1 and in group 2 are (2.72±1.29 (1-5) vs 1.46±0.67 (1-3), $p<0.05$), (2.00±1.03 (0-4) vs 2.50±0.64 (2-4), $p<0.05$), and (2.02±0.93 (1-4) vs 3.60±0.83 (3-6), $p<0.05$), respectively.

Conclusions: Caudal block anesthesia is superior to reduce pain intrarectal gel application in probe insertion and prostate biopsy in patients with anorectal disorders undergoing TRUS-guided prostate biopsy.

Key Words: Caudal block, intrarectal gel, prostate biopsy, visual analog scale.

Introduction

Transrectal ultrasound (TRUS)-guided biopsy still remains the standard procedure for diagnosing prostate cancer. TRUS-guided biopsy is known to be painful, in which approximately 20-65% of patients report moderate to severe pain (1). It is well tolerated by most patients without anesthesia but may cause a wide range of pain sensations from mild discomfort to severe pain, as demonstrated by different studies (2, 3). This situation can be explained by varying pain threshold and varying anorectal disorders. The two factors, anal discomfort of the ultrasound probe and insertion of the needles through the prostate gland, are usually responsible for pain during prostate biopsy.

Safety and effectiveness of caudal block anesthesia for perianal procedures and for prostate biopsy have been showed in various studies (4-6). Intrarectal gel is effectively used for the TRUS-guided prostate biopsy. The insertion of the probe into anal canal and the movement of the probe during the biopsy have been showed to cause some degrees of patients' discomfort, and especially in patients with anorectal disorders. The pain has been reported to worsen during needle biopsy (6-9).

Pain may be felt more during TRUS-guided prostate biopsy in anorectal disorders. To investigate diminishing pain in patients with anorectal disorders, we applied two different methods for anesthesia in these patients. In this retrospective study, we compared caudal block anesthesia and intrarectal gel anesthesia for TRUS-guided prostate biopsy in patients with anorectal disorders.

Patients and Methods

Between January 2009 and May 2010, 100 patients with anorectal disorders undergoing TRUS-guided prostate biopsy at our institution were entered into this study. Caudal block anesthesia (Group 1) was performed for 50 patients and intrarectal gel anesthesia (Group 2) was performed for 50 patients. Indications for biopsy included abnormal digital rectal examination and elevated prostate specific antigen (PSA) (>2.5 ng/ml). Exclusion criteria included; hemorrhagic diathesis, wound at the sacral region, acute anorectal disorders (anal fissure, perianal abscess) and lidocaine allergy. Aspirin was empirically discontinued 7 day before the TRUS-guided prostate biopsy. The observed anorectal disorders in group 1 and group 2 were hemorrhoids (n=34 and n=38), anal stenosis (n=2 and n=2) and chronic anal fissure (n=14 and n=10), respectively.

The patients received 500 mg ciprofloxacin the night before and, an enema and repeated 500 mg ciprofloxacin 2 hours prior to the procedure. Informed consent form was obtained from all patients. Ethics committee approval was obtained from Dumlupinar University Ethics Committee.

Caudal block anesthesia technique: Caudal block anesthesia was performed in the lateral decubitus position. The sacral corneus were palpated, and adhering to sterile precautions, 2 ml of 1% lidocaine was given for cutaneous analgesia. The caudal block anesthesia was applied using a 22 gauge 3.50 inches spinal needle inserted through the sacrococcygeal ligament at an angle 45º to the skin and advanced into the sacral canal for approximately 2 cm. After negative aspiration for control of blood and/or spinal fluid, a total 15 ml of lidocaine (1% lidocaine) was given into the caudal space. Before performing the prostate biopsy, the effectiveness of the caudal anesthesia was determined for 10 minutes after the administration of caudal block by a cold test.

In group 2, 15 cc 2% lidocaine gel were applied intrarectally 10 minutes before the prostate biopsy. After the waiting period TRUS-guided prostate biopsy was performed in each patient.

All biopsies were performed in the left lateral decubitus position with using transrectal 7.5-MHz ultrasound-probe (LOGIC 5, GE, USA). The prostate was scanned in the transverse and sagittal planes and the prostate volume was determined using the formula (width x length x height x 0.52). The prostate biopsy cores were taken by using an automatic single use 18-gauge needle under TRUS guidance. In group 1, basic requirements for cardiopulmonary resuscitation were available during all procedure and intravenous (IV) access was obtained for all patients. In group 1, consciousness level of the patients', vital signs, and arterial oxygen saturation (SpO_2) were monitored during the procedure, and patients also were monitored for approximately 60 minutes after the procedure.

TRUS-guided biopsies of the prostate with 12-core scheme were performed in first biopsy, and with 14-core scheme were performed in re-biopsy. Prophylactic ciprofloxacin was given orally for four days after prostate biopsy.

Table 1: Clinical characteristics of the patients

Characteristics of Groups	Group 1	Group 2	p Value
Number of patients	50	50	
Mean age (range)	66.20 (47-86)	69.02 (49-82)	p>0.05
Mean serum PSA (ng/ml) (range)	12.79 (3.43-46.03)	12.97 (4.38-100)	p>0.05
Mean prostate volume (cc) (range)	53.18 (37-93)	55.66 (29-100)	p>0.05
Mean core number (range)	12.28 (12-14)	12.32 (12-14)	p>0.05
Number of previous biopsy Yes No	 7 43	 8 42	p>0.05
Number of prostate Ca detected	12	18	p>0.05

Visual analogue scale (VAS) score was clearly explained to each patient before examination. VAS score, in which none for minimum pain and 10 for maximum pain, was used to evaluate pain scores as a questionnaire form. VAS pain was measured during anesthesia (VAS anesthesia), during the probe insertion (VAS probe) and during the biopsy procedure (VAS biopsy). Complications following biopsy, such as rectal bleeding, gross hematuria, dysuria and fever were noted.

The student t test was used to compare patient characteristics and, Mann-Whitney U test was used to compare the differences in VAS pain scores between the two groups. Statistical significance was considered at $p<0.05$. Percent values were evaluated by the chi-square test. All analysis was performed using SPSS version 15.0 (SPSS Inc., Chicago, IL).

Results

The mean age of the all patients was 67.61±8.43 (47-86) years. The mean PSA level was 12.88±12.35 (3.43-100) ng/ml. The mean prostate volume was 54.42±14.39 (29-100) cm^3. The mean caudal anesthesia time and intrarectal gel anesthesia time were 8.36±3.55 (2-25) and 1.8±0.63 (1-3) minutes. In caudal anesthesia group, good anal sphincter laxity and excellent cooperation during the probe insertion in transrectal prostate biopsy were observed.

Patients generally underwent 12 core biopsies (6 per lobes). A total of 14 cores were obtained in the 15 patients who underwent previous prostate biopsy. There was no statistical difference in prostate volume, age, number of biopsies obtained, and PSA levels between the groups. Patients' characteristics are summarized in table 1.

The mean biopsy times in group 1 and in group 2 were 7.92±2.22 (5-15) and 8.34±2.0 (5-14) minutes, respectively. The mean VAS score during the anesthesia is higher in group 1 than group 2. The mean VAS score during the probe insertion and during the prostate biopsies is lower in group 1 than group 2, and these differences are statistically significant. Differences in VAS score in two groups are showed in table 2.

There were no major complications, morbidity and mortality during the procedures in two groups. In group 1, transient dizziness and hypotension were observed 4 (8%) patients and 2 (4%) patients following caudal injection, respectively. Rectal bleeding, gross hematuria, and dysuria were observed in 21 (21%), 12 (12%), 31 (31%) patients, respectively. All these minor complications were followed conservatively. Fever (>38.0 °C) was seen in 3 (3%) patients and these patients hospitalized and treated with antibiotherapy. No significant differences were observed in terms of hematuria, rectal bleeding, and urinary infection after the biopsy between two groups.

Table 2: Pain scores during anesthesia, probe insertion and prostate biopsy

	Group 1	Group 2	p Value
VAS during anesthesia (Mean ± SD) (Range)	2.72±1.29 (1-5)	1.46±0.67 (1-3)	p<0.000
VAS at probe insertion (Mean ± SD) (Range)	2.00±1.03 (0-4)	2.50±0.64 (2-4)	p<0.005
VAS at prostate biopsy (Mean ± SD) (Range)	2.02±0.93 (1-4)	3.60±0.83 (3-6)	p<0.000

Discussion

TRUS-guided biopsy should be performed for diagnosing prostate cancer. Prostate biopsy causes some degree of pain and discomfort in most of the patients. Some form of local anesthesia is recommended during prostate biopsy (10, 11). Different techniques of local anesthesia have been demonstrated to be useful to reduce the pati-

ents' discomfort and pain during the biopsy (12-15). Two main factors are usually responsible for pain during prostate biopsy; anal discomfort due to the ultrasound probe and insertion of needles through the prostate gland (16, 17). Periprostatic nerve blockade is the most widely used technique to reduce pain, and it is accepted to be easy to learn and it is offered to the patients as an effective anesthesia with a low risk of complications (18). Although periprostatic nerve blockade is a good method for pain control during the insertion of needles through the prostate gland, periprostatic nerve blockade has little effect for another component of pain arises from the insertion of ultrasound probe (17).

The pain during prostate biopsy is related to needle puncture of the prostatic capsule. In periprostatic anesthesia; the lidocaine injection at the junction of the prostate and seminal vesicle blocking the autonomic fibers innervating the capsule and passing through the prostatic vascular pedicle adjacent to the seminal vesicle (6-9). Soloway and Obek showed that periprostatic local anesthesia is efficient for prostate biopsy (15). But, especially in patients with anorectal disorders probe insertion is very painful in TRUS-guided prostate biopsy. In these patients caudal block anesthesia and intrarectal gel application may be more effective than other anesthetic method to reduce pain during probe insertion. We compared caudal block anesthesia and intrarectal gel anesthesia before prostate biopsy in patients with anorectal disorders to investigate efficacy of these anesthetic methods.

Lidocaine gel has been used in many outpatients procedure, such as cystoscopy. Lidocaine gel decreases discomfort and pain during probe insertion but have no influence on pain when penetrating the prostate capsule. Local anesthesia with intrarectal application of lidocaine gel can be performed without difficulty. Only a few seconds are required for rectal application of lidocaine and a 10-minutes waiting time before biopsy is needed. This anesthesia is safe and effective for reducing discomfort and pain quite significantly.

Inal et al have reported that they could find no evidence of any superiority of intrarectal lidocaine gel according to other groups (periprostatic nerve blockade, unilateral pudendal nerve blockade, combination of periprostatic nerve blockade and intrarectal lidocaine gel) (19). Also, Desgrandchamps et al failed to provide evidence of any superiority of lidocaine gel because of similar pain score data obtained in the placebo group (14). Issa et al compared intrarectal administration of lidocaine gel 10 minutes before TRUS-guided prostate biopsy with results in a control group deprived of anesthesia and concluded that gel instillation to decrease pain was a simple, safe and effective method of anesthesia (20). Stirling et al proved that the two techniques (intrarectal gel and periprostatic nerve blockade) of local anesthesia effective and intrarectal lidocaine gel was even more effective for decreasing pain during probe insertion (21).

Alavi et al showed that pain perception during TRUS-guided prostate biopsy, as measured by VAS score after periprostatic infiltration of 1% lidocaine, was significantly less than after instillation of 2% intrarectal lidocaine gel. This difference between two groups is statistically significant (22). Mallick et al showed that patients undergoing intrarectal administration of lidocaine gel had lower mean pain scores than those treated with periprostatic lidocaine infiltration with significant VAS differences during anesthesia and 30 minutes after the biopsy (23). Caudal block anesthesia may significantly reduce the patients' discomfort and pain during TRUS-guided prostate biopsy. Caudal block procedure is easy to learn and to be performed (5, 24). Some possible causes of failure of caudal block anesthesia have been reported such as the lack of experience in the procedure, obesity, and ossified sacrococcygeal membrane which makes it impossible to enter the needle and inject the anesthetic agent into the sacral epidural space (25). Horinaga et al reported that caudal block with 10ml 1% lidocaine provided less effective anesthesia than periprostatic nerve blockade with same dose of lidocaine for TRUS-guided prostate biopsy (26).

Our study have revealed that the patients with caudal block anesthesia feel less pain during probe insertion and prostate biopsy than intrarectal gel application in patients with anorectal disorders ($p<0.05$). But, the mean VAS score during anesthesia application in caudal block was higher than intrarectal application ($p<0.05$). In caudal block group, the visual laxity of the anal sphincter also made TRUS-guided biopsy to be performed more easily than intrarectal gel application, and it was easier to feel the entire prostate gland.

Conclusions

The results of this study suggest that the caudal block anesthesia for TRUS-guided prostate biopsy is more effective than intrarectal gel application to reduce pain during probe insertion and during prostate biopsy in patients with anorectal disorders. A further study to compare caudal anesthesia should be performed in patients with anorectal disorders.

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