Caudal block anaesthesia for transrectal biopsy of prostate in patients with anal rectal disorders

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KEY WORDS

prostate ◗ prostate cancer ◗ caudal anaesthesia ◗ transrectal prostate biopsy ◗ pain

ABSTRACT

The aim of the study. To investigate the effectiveness of caudal anesthesia for transrectal prostate biopsy with anal rectal disorders.
Material and methods. A total of 36 patients with anal rectal disorders underwent prostate biopsy. The observed anorectal problems and/or diseases were hemorrhoids (n = 19), hemorrhoidectomy (n = 7), anal stenosis (n = 2) and chronic anal fissure (n = 8). A questionnaire covering pain scores was assessed using the visual analog pain scale (VAS) during caudal anesthesia, probe insertion, probe maneuver and biopsies separately. Caudal block anesthesia was performed using 15 mL of lidocaine 1% in the lateral decubitus position.
Results. The mean ±SD [min-max] biopsy time was 9.7 ±2.1 (5-16) minutes. The mean ±SD (min-max) caudal anesthesia time was 11.3 ±5.6 (1-25) minutes. The mean ±SD (min-max) VAS during the probe insertion, the probe maneuvers, the biopsies, caudal anesthesia were 1.1 ±0.9 (0-2), 1.2 ±1.2 (0-3), 2.1 ±1.4 (1-4), 1.9 ±1.4 (1-5), respectively.
Conclusion. Caudal block anesthesia can be used for transrectal ultrasound guided biopsy of the prostate in patients with anal-rectal problems.

INTRODUCTION

Transrectal ultrasound (TRUS)-guided prostate biopsy is a standard procedure used to diagnose prostate cancer. The method is known to be painful, in which approximately 20-65% of patients report moderate to severe pain [1]. Recent studies with periprostatic local anaesthesia into the neurovascular bundles suggested significantly lowered levels of pain during the biopsy procedure [2]. The pain is induced predominantly with the needle penetration through the prostatic capsule and stroma. However, the insertion of the probe into anal canal and the movement of the probe during the biopsy procedure have been reported to cause some degrees of patient discomfort, and especially in patients with a history of anal rectal disorders, the pain has been demonstrated to worsen with needle biopsy [3, 4, 5, 6].

The safety and effectiveness of caudal anaesthesia for perianal procedures have been reported [7, 8, 9]. To our knowledge; no report is currently available on the use of caudal anaesthesia for TRUS-guided prostate biopsy in patients with anal-rectal disorders. In this study, we aimed to evaluate the effectiveness and the safety of caudal anaesthesia in patients with anal-rectal disorders.

MATERIALS AND METHODS

The study was performed with the accordance to the guidelines of National Institute of Health. All patients were informed of all the procedures to be performed, and written informed consent was obtained according to their own will. The study was performed between December 2006 and July 2008.

PATIENTS

Thirty six patients were included in the study. Prostate biopsy was indicated in all patients submitted to a TRUS-guided prostatic biopsy due to the digital rectal examination (DRE) findings and/or elevated prostate-specific antigen (PSA) levels. Patients with anorectal problems and/or disease such as hemorrhoids, anal stenosis and chronic anal fissure were included in the study. Exclusion criteria were refusal of informed consent, paraplegia, previous history of adverse reactions to lidocaine injection, perianal discharge, wounds at the sacral region, and acute anal fissure. Patients receiving anticoagulant therapy or aspirin were also excluded. According to medical history, patients with anorectal disorders were referred to general surgeon prior to biopsy. The observed anorectal problems and/or diseases were hemorrhoids (n = 19), hemorrhoidectomy (n = 7), anal stenosis (n = 2) and chronic anal fissure (n = 8).

CAUDAL BLOCK TECHNIQUE

Caudal block anesthesia was performed in the lateral decubitus position. The sacral corneus were then palpated, and adhering to sterile precautions, 2 mL of lidocaine 1% was given for cutaneous analgesia. The caudal block anaesthesia was administered using a 22-gauge; 3.50 inches pencil-point spinal needle inserted through the sacrococcygeal ligament at an angle 45° to the skin and advanced into the sacral canal for approximately 2 cm. After negative aspiration to control for blood and/or spinal fluid, a total 15 mL of lidocaine 1% lidocaine was injected into the caudal space. Before proceeding to carry out the TRUS-guided prostate biopsy, the effectiveness of the caudal anaesthesia was determined about 10 min after the administration of caudal block by a cold test.

The biopsy was performed in an outpatient setting, with the patient in the left lateral decubitus position. All biopsies were performed using transrectal 7.5-MHz ultrasound-probe (LOGIC 5, GE, USA). The prostate was scanned in the transverse and saggital planes and prostate volume was determined using the formula (width x length x height x 0.52). The biopsy cores were taken using an automated spring-loaded 18-gauge needle under TRUS guidance. Basic requirements for cardiopulmonary resuscitation were available during all procedures and IV access was obtained in all patients. The patients' level of consciousness, vital signs, and arterial oxygen saturation (SpO_2) were monitored during the produce. All patients were monitored for approximately mean 60 minutes after the procedure. The degree of motor block was assessed with the modified Bromage scale (0 = no motor block; 1 = unable to raise extended leg, able to move knees and foot; 2 = unable to raise extended leg or knees, able to move foot; 3 = complete motor block of lower limb).

The procedure time was measured in two sections. The first section was measured from the induction of anaesthesia to the beginning of prostate needle biopsy (anaesthesia duration). The second section was measured from the beginning of the prostate needle biopsy to TRUS probe removal (biopsy duration). All patients were scheduled for a systematic ten-region prostate biopsy. However, in some patients, the number of cores obtained was adjusted because of various factors such as prostate size and abnormal DRE findings. Prophylactic ciprofloxacin was given orally for 4 days after prostate needle biopsy.

A questionnaire containing pain scores was assessed using a visual analogue pain scale (VAS) (minimum point of 0 and maximum point of 10) during caudal anaesthesia, probe insertion into anal canal, probe manoeuvre and biopsies separately. The patients' satisfactions were evaluated on average 60 minutes after completion of the biopsy procedure. The patients were ordered to score (0 = bad, 1 = good, and 2 = very good) for their satisfaction.

RESULTS

The mean ±SD (min-max) age of the patients was 66.1 ±6.7 (51-80) years. The mean ±SD (min-max) PSA level was 9.6 ±7.8 (2.1-77.5) ng/mL. The mean ±SD (min-max) prostate volume was 57.4 ±12.6 (35.7-68.9) cm^3. The mean ±SD (min-max) caudal anaesthesia time was 11.3 ±5.6 (1-25) minutes. Median (min-max) biopsies obtained per patient were 11 (10-14).

Bromage score was 0 in 27 all patient. Bromage scores were 1, 2 and 3 in 5, 3 and 1 patients respectively. In all patients with effective caudal anaesthesia, anal sphincter laxity and excellent cooperation during the transrectal prostate biopsy were observed. The mean ±SD [min-max] biopsy times were 9.7 ±2.1 (5-16) minutes.

The mean ±SD (min-max) VAS during the probe insertion, the probe manoeuvres, the biopsies, caudal anaesthesia were 1.1 ±0.9 (0-2), 1.2 ±1.2 (0-3), 2.1 ±1.4 (1-4), 1.9 ±1.4 (1– 5), respectively. The patients' satisfaction scores were 0 in 1/36 (2.7%) patient, where as 1 and 2 in 11/36 (30.5%) and 24/36 (66.6%) respectively.

There were no major complications, morbidity, or mortality and systemic lidocaine toxicity during caudal block and biopsy procedures. Transient dizziness and hypotension were observed in 4/36 patients (11.1%) and in 2/36 (5.5%) patients following caudal injection, respectively. Rectal bleeding and urethrorrhagia, haematuria were occurred in 8/36 (22.2%); 2/36 (5.5%) and 1/36 (2.7%) patients, during and/or the biopsy procedure, respectively. All of these minor complications were maintained conservatively.

Malignancy; high-grade prostatic intraepithelial neoplasia; and atypical small acinar proliferation (ASAP) were observed in 10/36 (27.7%); 5/36 (13.8%) and 2 (5.5%) patients, respectively.

DISCUSSION

TRUS-guided prostate biopsy is a common procedure for the diagnostic evaluation of patients with elevated prostate-specific antigen levels or abnormal digital rectal examination findings [10]. However, prostate biopsy triggers some degree of pain and discomfort in most of the patients, and there is currently a consensus regarding the necessity of the application of some form of anaesthesia during TRUS-guided prostate biopsy [11,12]. Different techniques of local anaesthesia including intrarectal application of lidocaine gel and periprostatic infiltration with lidocaine have been used to reduce the patients' discomfort and/or pain during the procedure [13, 14].

The ideal method which employs anaesthesia techniques to control the pain and discomfort during the procedure and improve patients' tolerance has been widely discussed in several previous studies [2]. Easy to perform, quick onset of the action, reversible effect and minimal side effects are the primary features of these anaesthesia techniques for TRUS- guided prostate biopsy. These techniques also should allow the urologist to perform the prostate biopsy on an outpatient basis in his daily practice.

TRUS-guided prostate biopsy consists of three phases which are namely probe insertion, probe manoeuvres and needle insertion for sampling different parts of the gland [15]. The pain experienced during TRUS-guided prostate biopsy has been attributed to probe insertion and the needle punctures into the prostate. Currently, the most widely used analgesic method for pain relief during TRUS-guided biopsy of the prostate is periprostatic nerve blockade. Although periprostatic nerve block has been widely reported to be highly efficient, it is worth to note that no significant difference or only borderline improvement in pain scores could be detected in occasional studies which suggest that pain relief with periprostatic nerve block is not as effective as previously suggested [16, 17]. However, this method has no effect on the probe pain, which is sometimes worse than the biopsy procedure [18]. Periprostatic nerve block injection could be made only after the probe insertion. These findings suggest that some additional interventions are needed to control the pain during the probe insertion when periprostatic nerve blockade is used to decrease the pain during biopsy procedure.

Intrarectal lidocaine is another method to control pain the TRUS-guided biopsy. Administration of 2% lidocaine gel has been reported to result with significant difference in the median pain score compared with placebo gel [19]. However, in some others' study no comparable therapeutic or analgesic benefit of intrarectal lidocaine gel with lubricant alone for TRUS-guided biopsy of the prostate was observed [5]. Although some limited and controversial data suggest that intrarectal lidocaine gel can decrease pain during probe insertion and resolves probe discomfort during biopsy procedures. The authors would like to mention here that some further studies are needed to clarify this issue. A combination modality, rather than a single modality, may be more effective to control the pain and discomfort during probe insertion and during needle insertion.

Several anorectal and urologic procedures are known to have been performed successfully with pudendal nerve blockade [20, 21]. The pudendal nerve block has been demonstrated to lower the pain scores for probe insertion and manipulation during the TRUS-guided biopsy. However, this method requires deep insertion of the index finger into the rectum during the blockade procedure, making the technique intolerable for our patients [18].

The use, safety and effectiveness of caudal anaesthesia for perianal procedures were evaluated in some previous studies [8, 9]. Ikuerowo et al. showed that caudal block anaesthesia should be considered as a suitable form of anaesthesia for patients undergoing transrectal biopsy of the prostate gland with minimal additional morbidity [7]. However, the authors did not attempt to evaluate pain independently during the probe insertion, manoeuvres and biopsy procedure. Another limitation of this study in our opinion (which makes it difficult to compare with our results) is the time interval to score VAS during the biopsy procedure, which is not apparent. Horinaga et al reported that caudal block with 10 mL 1% lidocaine provided less effective anaesthesia than a periprostatic nerve block with the same dose of lidocaine for TRUS-guided prostate needle biopsy [22]. In our opinion, in this study, lower doses of lidocaine used in this study may be the reason of such result. Kravchick et al. demonstrated that perianal local anaesthesia may decrease discomfort and pain during probe insertion and TRUS-guided biopsy in patients with anal-rectal problems. In their modi-

fied technique they also preferred to use sedation and local anaesthetic creams in their patients [6]. The results of their study merit a further study with a randomization of the patients either to take sedation local anaesthetic creams or not.

Our data shows that caudal anaesthesia is a reliable anaesthetic method for transrectal prostate biopsy with anal rectal disorders. We observed that the patients with caudal nerve blockade experienced decreased pain during probe insertion, with probe manipulation and prostate biopsies. The laxity of the anal sphincter also made TRUS-guided biopsy to be performed more easily and it was easier to feel the entire prostate gland for hardness and nodules on its surface. Minimal requirements for caudal anesthesia are easy to supply with low costs and the caudal block procedure is easy to learn and to be performed [9, 23]. It can significantly reduce the patients' discomfort and make transrectal biopsy a more satisfactory experience for the patients and the surgeon. However, some possible causes of failure of caudal block anaesthesia should be considered before its performance. Lack of experience in the procedure of caudal anaesthesia, obesity, and ossified sacrococcygeal membrane which makes it impossible to inject the anaesthetic agent into the sacral epidural space are the primary limitations of the success of the technique [24].

In conclusion, the results of this study suggest that the caudal block anaesthesia should be a suitable form of anaesthesia for patients with anal rectal disorders undergoing transrectal biopsy of the prostate gland. The technique has been observed to be effective to control the pain during probe insertion and biopsy with safety. These result merits further randomized study with a larger sample size to compare the effect of caudal block with the combination of periprostatic blockade and anorectal anaesthetic creams such as lidocaine. In addition, the safety and the effectiveness of caudal anaesthesia make it an alternative method of achieving anaesthesia for transrectal prostate biopsy in patients with no anal rectal disorders.

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