

PERIPROSTATIC NERVE BLOCK FOR PROSTATE BIOPSY

Kazushi SHIGENO, Shinji URAKAMI, Tatsuaki YONEDA, Hirofumi KISHI, Hiroaki SHIINA and Mikio IGAWA

Department of Urology Shimane University School of Medicine

(Accepted November 29, 2005)

One hundred and twenty patients were injected with 3 ml of 1% lidocaine and 3 ml of saline (control) to opposite sides of the periprostatic region prior to undergoing a prostate biopsy. Pain during the biopsy procedure was assessed with the Wong-Baker FACES Pain Rating Scale (0 - 5). The number of patients describing a pain score of 2 or greater decreased from 38 (31.7%) on the control side to 15 (12.5%) on the lidocaine side whilst 82 patients (68.3%) registered a pain score of 0 or 1 on the control side. A decrease of 1, 2 or 3 in the pain score on the lidocaine side compared with the control side was found in 30%, 12.5% and 0.8% of patients respectively. The nerve block should be applied to patients who desire it following an explanation of the results of this study.

Key words: Prostate cancer, prostate biopsy, nerve block, anesthesia

INTRODUCTION

Transrectal prostate biopsy is commonly performed as an office procedure because of the relative ease and low incidence of complications. Nevertheless, some reports demonstrate that the procedure is not comfortable^{1,2,3}. Recent studies indicate that periprostatic nerve block^{4,5,6,7} or intrarectal lidocaine gel⁸ may be effective methods to provide pain relief for prostate biopsy. However, conflicting results have also been reported. Wu et al. noted that injection of lidocaine lateral to the seminal vesicles did not diminish the pain associated with the biopsy⁹. In addition, a report from New Zealand found that prostate

biopsy was well tolerated without an accompanying anesthetic¹⁰. We have also experienced that most patients did not complain of significant pain when the procedure was performed without any type of anesthesia. One of the reasons for this discrepancy is that the degree of discomfort associated with prostate biopsy varies considerably among individuals. Most of the reported trials were analyzed by comparing a group of patients that received anesthesia (typically around one hundred patients) to a control untreated group. As a result, these studies might have an unexpected bias. To determine the actual analgesic efficacy of periprostatic nerve block, we have therefore evaluated the effect of a unilateral periprostatic nerve block and used the contralateral untreated side of each patient as control.

PATIENTS AND METHODS

One hundred and twenty patients who underwent transrectal prostate biopsy between June 2001 and February 2002 were enrolled in this study. Patient characteristics are shown in Table 1. Indications for performing a biopsy included abnormal DRE findings, elevated PSA level and/or TRUS abnormality. Study exclusion criteria were a history of previous transrectal prostate biopsy, the presence of urological infection, active anal or rectal conditions such as hemorrhoids and neurological conditions. Patients with known prostate cancer were also excluded. Informed consent was obtained from each patient following a detailed description of the study.

Patients were placed in the left lateral decubitus

Correspondence: Kazushi Shigeno, MD Department of Urology, Shimane Medical University 89-1 Enya-cho, Izumo 693-8501, Japan
Tel: +81 853 20 2253
Fax: +81 853 20 2250
E-mail: shige-k@shimane-med.ac.jp

Table 1. Patient Characteristics

No. of patients, dates	120, July 2001 - February 2002
Age	53-89 years old (median 72)
Serum PSA	2.1-205.6 ng/ml (median 5.8)
Prostate volume	12-185 ml (median 30)
Detected cancer	39 cases

position and were injected with 3 ml of 1% lidocaine and 3 ml of saline (control) to each side of the periprostatic region 5 minutes before the biopsy. The side injected with lidocaine was alternated between patients. Injections were performed under ultrasound guidance. A 23-gauge needle was inserted into the region of the neurovascular bundle just lateral to the junction between the prostate and the seminal vesicle. Patients were asked to separately grade the pain level experienced during the first three biopsies (right lobe) and the next three biopsies (left lobe) directly after they were performed. Patients were blinded to the side where the lidocaine was injected. Pain during the biopsy procedure was assessed with the Wong-Baker FACES Pain Rating Scale¹¹ (0 - 5) (fig. 1). The last 60 patients were informed of the side of the lidocaine injection after indicating the pain grades. They then received a questionnaire with the question "If you need to receive the same procedure again, would you require bilateral anesthesia?" and were asked to answer either "Yes", "Indifferent" or "No". After scoring the pain level of the sextant biopsy, direct biopsies or additional biopsies more than 6 cores were performed if necessary. All transrectal ultrasound guided biopsies were carried out using a 7.5 MHz endfire probe (Aloka, Tokyo, Japan). Biopsy cores were obtained using an automatic spring-loaded biopsy gun and an 18 gauge needle. All procedures were performed by the same urologist (K.S.) and the study protocol was approved by the Ethical Committee of our University.

The paired Student t test and the Wilcoxon signed ranks test were used for comparison of data with

commercially available computer software (StatView 5.0 for Windows, SAS Institute Inc., NC, USA).

RESULTS

The median age of the patients was 72 years (range: 53 - 89), the median PSA level was 5.8 ng/ml (2.1 - 205.6) and the median prostate volume was 30 ml (12 - 185).

The mean pain scores on the lidocaine and the control side were 0.7 ± 0.7 and 1.2 ± 1.0 respectively ($p < 0.0001$). The number of patients describing a pain score of 2 or greater decreased from 38 (31.7%) on the control side to 15 (12.5%) on the lidocaine side whilst 82 patients (68.3%) registered a pain score of 0 or 1 on the control side (fig. 2A, B). A decrease of 1, 2 or 3 in the pain score on the lidocaine side compared with the control side was observed in 30%, 12.5% and 0.8% of patients respectively. A decrease of 0 or -1 in the pain score on the lidocaine side compared with the control side was observed in 68 (56.7%) (fig. 3). After grading the pain level, only 25% of 60 patients indicated on the questionnaire that they would require bilateral anesthesia if they were to undergo a prostate biopsy again (Fig. 4). Indeed, the proportion of patients who indicated that they would require bilateral anesthesia increased with a greater pain score on the control side. There was no correlation between patient age or prostate volume and pain score on the control side or a decrease of pain score on the lidocaine side compared with the control side (fig. 5). There were no complications associated with anesthetic injection.

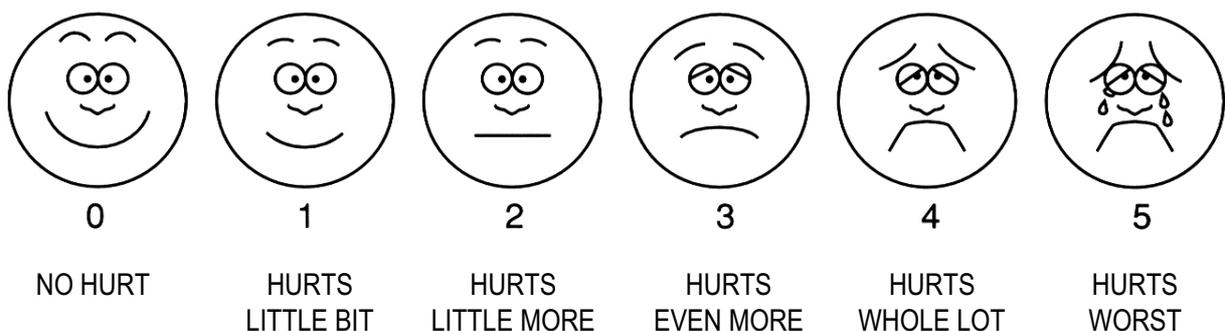


Fig. 1. Wong-Baker FACES Pain Rating Scale.

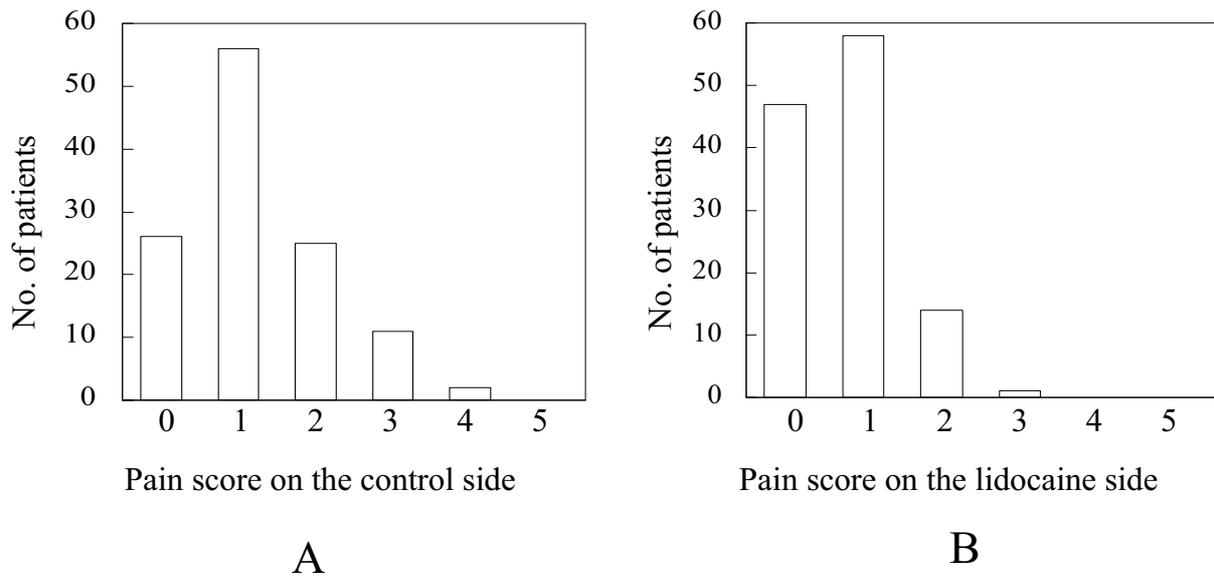


Fig. 2. Distribution of patients according to pain score on the control side (A) and on the lidocaine side (B).

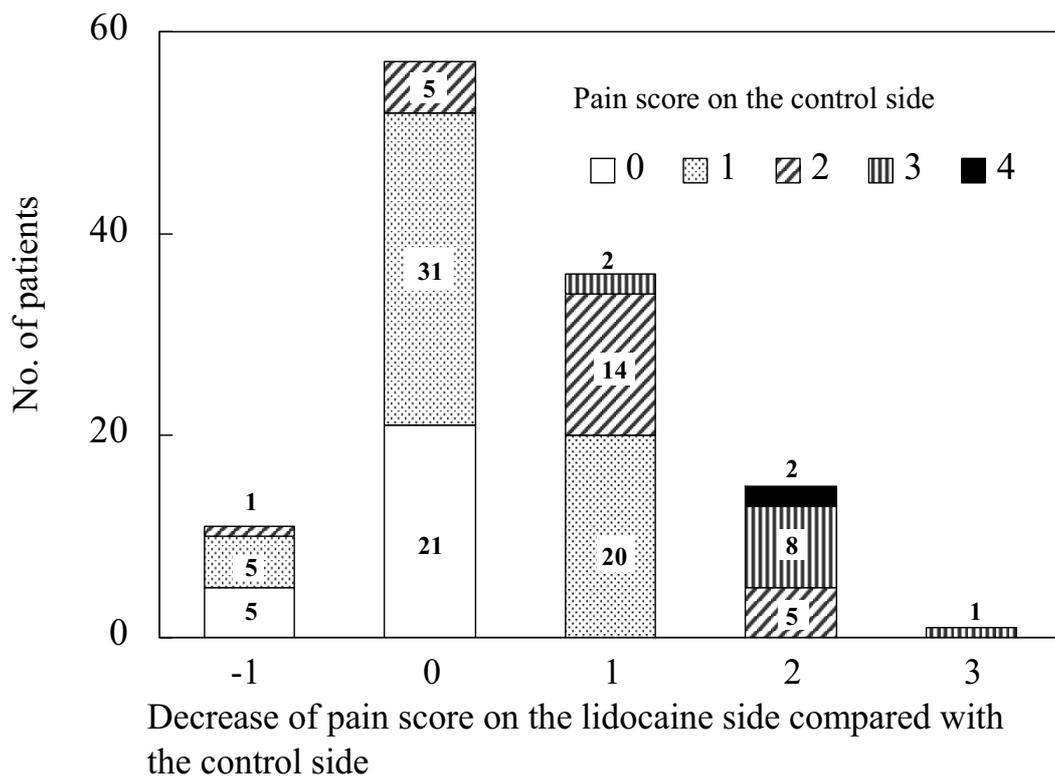


Fig. 3. Distribution of patients according to decrease of the pain score on the lidocaine side compared with the control side

DISCUSSION

Conflicting results have been reported regarding the efficacy of local anesthesia for prostate biopsy. The marked variety of individual susceptibility to pain may significantly influence the results of the

studies. The mean pain scores on the Visual Analogue Scales, which are used by most investigators, varied from 2.5 to 5.6 in the control groups and from 1.2 to 2.7 in the anesthetic groups in these reports^{6 7 8 9 12 13}. A low mean pain score in the control groups results in any difference between the two

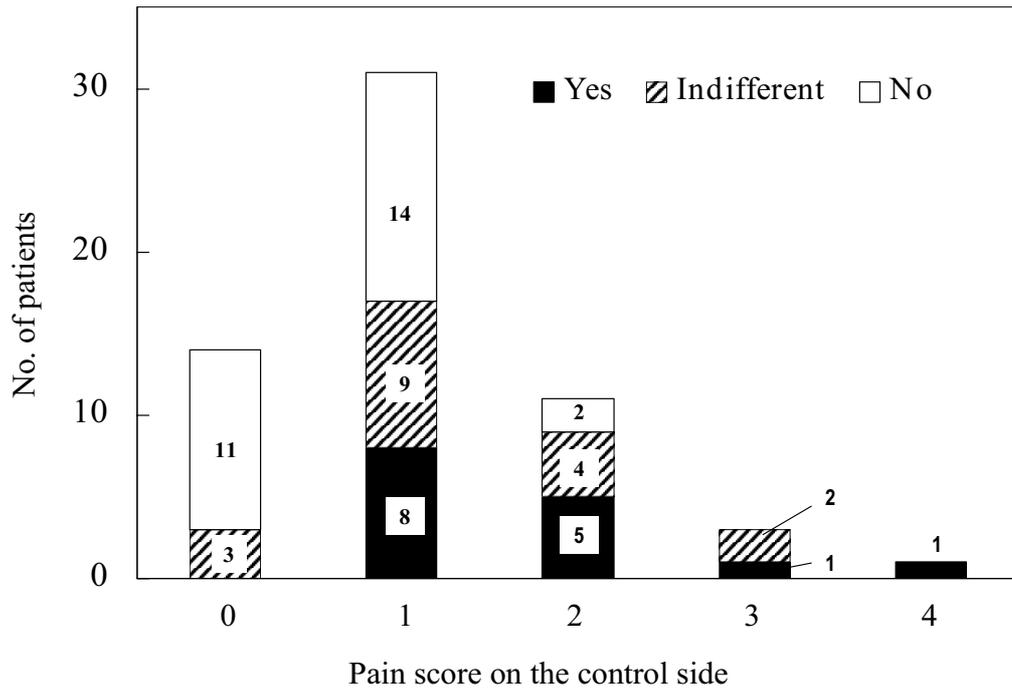


Fig. 4. Distribution of patients according to the answer to the question “If you need to receive the same procedure again, would you require bilateral anesthesia?”.

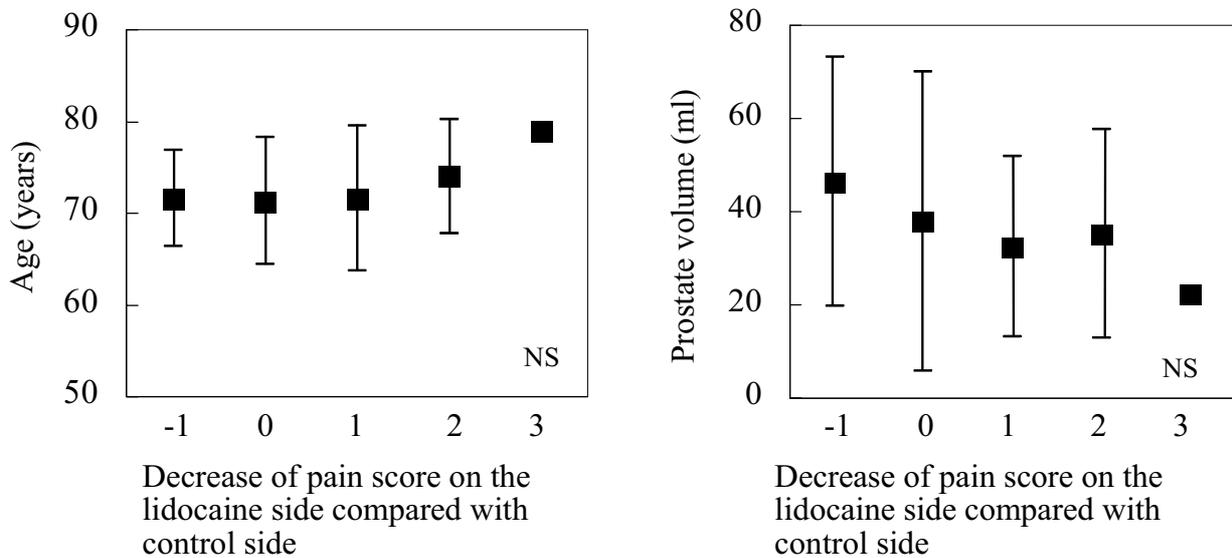


Fig. 5. Correlation between decrease of the pain score on the lidocaine side and age or prostate volume.

groups being correspondingly small. In fact, the mean score of the control group in the study by Wu *et al.* was low and the difference between the anesthetic and control groups was not significant⁹. In order to avoid these unexpected influences, we compared the pain score obtained from the anesthetized side and the control side in the same patient. As might be expected, a correlation was found between

the decrease of pain score on the anesthetized side and the pain score on the control side. Although the difference of pain scores between the two sides was statistically significant, the difference was very small. In our study, about half of the patients did not benefit from periprostatic nerve block prior to prostate biopsy. In fact, only 25% of patients who underwent prostate biopsy indicated a desire to receive bilateral

periprostatic nerve block prior to repeat biopsy. This is a much lower rate than we expected.

We evaluated the effect of nerve block following a standard sextant biopsy in order to avoid the influence of the number of biopsies. After the patients graded the pain score, we performed additional biopsies such as far lateral biopsies. "Pain accumulation" or a decrease in the pain threshold after each consecutive biopsy was found by Kaver et al.⁷, while Smathers et al. found no correlation between the patient's implant pain score and the number of implant needles used during prostate brachytherapy performed under local anesthesia¹⁴. Recently, the number of cores obtained during a prostate biopsy has tended to increase¹⁵. Although it is not clear whether the number of cores influences the level of pain, the number of biopsy cores should be taken into account when considering the necessity of periprostatic nerve block.

The Visual Analogue Scales is a popular technique for grading the pain level. We used the Wong-Baker FACES Pain Rating Scale, which was developed for assessing pain in children but is also used to assess pain in adults. This scale depicts facial expressions with simple words that are easily understood by older adults such that accurate answers may easily be obtained.

No complications were experienced during this study which is in accordance with other reported studies. Vaidya and Soloway also noted that radical prostatectomy was not more difficult in the 62 patients who subsequently underwent surgery¹⁶. However, despite the low possibility, attention should be paid to the potential for allergic reactions, increased incidence of infection or local reactions such as fibrosis.

Unfortunately, it is not possible to determine factors that distinguish the patients who benefit from the anesthesia from those who do not. Other workers have found that the pain level documented during prostate biopsy correlated with younger age and a smaller prostate size¹⁷ whilst others have not found any useful correlation⁷. Further studies are needed to clarify these issues.

CONCLUSION

Although many recommend that all patients should receive periprostatic nerve block prior to prostate

biopsy it is apparent that half the patients may not derive any significant benefit. As a result, it is not appropriate for all patients to receive the nerve block. We think that it should be restricted to patients who desire it following an explanation of the results of this study.

REFERENCE

- 1) Clements, R., Aideyan, O. U., Griffiths, G. J. et al. (1993) Side effects and patient acceptability of transrectal biopsy of the prostate. *Clin Radiol*, 47: 125.
- 2) Collins, G. N., Lloyd, S. N., Hehir, M. et al. (1993) Multiple transrectal ultrasound-guided prostatic biopsies--true morbidity and patient acceptance. *Br J Urol*, 71: 460.
- 3) Zisman, A., Leibovici, D., Kleinmann, J. et al. (2001) The impact of prostate biopsy on patient well-being: a prospective study of pain, anxiety and erectile dysfunction. *J Urol*, 165: 445.
- 4) Nash, P. A., Bruce, J. E., Indudhara, R. et al. (1996) Transrectal ultrasound guided prostatic nerve blockade eases systematic needle biopsy of the prostate. *J Urol*, 155: 607.
- 5) Soloway, M. S., Obek, C. (2000) Periprostatic local anesthesia before ultrasound guided prostate biopsy. *J Urol*, 163: 172.
- 6) Leibovici, D., Zisman, A., Siegel, Y. I. et al. (2002) Local anesthesia for prostate biopsy by periprostatic lidocaine injection: a double-blind placebo controlled study. *J Urol*, 167: 563.
- 7) Kaver, I., Mabjeesh, N. J., Matzkin, H. (2002) Randomized prospective study of periprostatic local anesthesia during transrectal ultrasound-guided prostate biopsy. *Urology*, 59: 405.
- 8) Issa, M. M., Bux, S., Chun, T. et al. (2000) A randomized prospective trial of intrarectal lidocaine for pain control during transrectal prostate biopsy: the Emory University experience. *J Urol*, 164: 397.
- 9) Wu, C. L., Carter, H. B., Naqibuddin, M. et al. (2001) Effect of local anesthetics on patient recovery after transrectal biopsy. *Urology*, 57: 925.
- 10) Westenberg, A. M., Cossar, E. H., Lorimer, L. B. et al. (1999) The acceptability of transrectal ultrasound guided prostatic biopsy without anaes-

- thesia. *N Z Med J*, 112: 231.
- 11) Wong, D. L., Baker, C. M. (1988) Pain in children: comparison of assessment scales. *Pediatr Nurs*, 14: 9.
- 12) Pareek, G., Armenakas, N. A., Fracchia, J. A. (2001) Periprostatic nerve blockade for transrectal ultrasound guided biopsy of the prostate: a randomized, double-blind, placebo controlled study. *J Urol*, 166: 894.
- 13) Alavi, A. S., Soloway, M. S., Vaidya, A. et al. (2001) Local anesthesia for ultrasound guided prostate biopsy: a prospective randomized trial comparing 2 methods. *J Urol*, 166: 1343.
- 14) Smathers, S., Wallner, K., Simpson, C. et al. (2000) Patient perception of local anesthesia for prostate brachytherapy. *Semin Urol Oncol*, 18: 142.
- 15) Davis, M., Sofer, M., Kim, S. S. et al. (2002) The procedure of transrectal ultrasound guided biopsy of the prostate: a survey of patient preparation and biopsy technique. *J Urol*, 167: 566.
- 16) Vaidya, A., Soloway, M. S. (2001) Periprostatic local anesthesia before ultrasound-guided prostate biopsy: an update of the miami experience. *Eur Urol*, 40: 135.
- 17) Rodriguez, L. V., Terris, M. K. (1998) Risks and complications of transrectal ultrasound guided prostate needle biopsy: a prospective study and review of the literature. *J Urol*, 160: 2115.