

IS THE PERIPROSTATIC ANESTHETIC BLOCKADE ADVANTAGEOUS IN ULTRASOUND-GUIDED PROSTATE BIOPSY?

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ABSTRACT

Objective: To assess the benefit of the periprostatic administration of lidocaine previously to ultrasound-guided prostate biopsy.

Materials and Methods: In the period from April to October 2002, forty patients underwent ultrasound-guided prostate biopsy due to increased PSA or abnormal digital rectal examination. A randomized double-blind study was performed, where the patients received an injection of lidocaine 2% or saline solution, in a total of 10 ml periprostatic. Immediately following the biopsy, the pain associated to the procedure was assessed, using a visual analogical scale from 0 to 10. The mean number of fragments collected per patient in the biopsies was 11.3. The statistical analysis used for assessment of pain was the Student's t, with $p < 0.05$ being significant.

Results: The groups were homogeneous concerning the anthropometrical data. In relation to pain, those patients in the groups that underwent biopsy with the use of lidocaine presented a maximum score of 6, while in the group that underwent biopsy with the use of saline solution, 4 patients presented score 7 ou 8. The mean score and standard deviation with lidocaine were 2.55 ± 2.34 (CI 95% = 1.53 to 3.57) and with saline solution were 3.75 ± 2.52 (CI 95% = 2.66 \pm 4.84) with no statistical significant difference between the groups.

Conclusion: The lidocaine injection did not show statistical difference when compared with saline solution in the periprostatic blockade during echo-guided prostate biopsy.

Key words: prostatic neoplasms; diagnosis; ultrasonography; biopsy; needle; local anesthesia
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INTRODUCTION

The transrectal ultrasound-guided biopsy of the prostate is an integrant part of the assessment and diagnosis of prostate cancer in patients with high prostate-specific antigen (PSA) or abnormalities on the digital rectal examination (1).

The majority of urologists have performed this procedure without anesthesia or sedation (2). Though it is well tolerated by the patients, this method is associated with some discomfort and pain (3). Some studies have demonstrated that local anesthesia significantly reduces the patients' pain and discomfort (2,4-6), however with varying methodologies.

Our purpose was to assess if there is any advantage of the periprostatic anesthetic blockade previously to ultrasound-guided prostate biopsy in a double-blind randomized study.

MATERIALS AND METHODS

We conducted a prospective, double-blind randomized study in 40 patients submitted to prostate biopsy indicated due to high PSA or abnormality on the digital rectal examination, in the period from April to October 2002.

Patients with coagulation disorders or using anticoagulants were excluded. Patients received an-

tibiotic prophylaxis with ciprofloxacin 500 mg orally each 12 hours, starting 6 hours before the procedure, with no dietary restrictions or previous bowel preparation.

Patients were randomly distributed into 2 groups with 20 patients each, receiving periprostatic injection of 2% lidocaine without vasoconstrictor or 0,9% saline solution, in unlabeled 10-ml syringes that had been prepared by a nurse.

After the patients being positioned in left lateral decubitus, the transrectal ultrasound was performed using a 7,0 MHz end-fire probe. Images and measurements of the prostate were obtained in transversal and longitudinal sections. Using a 22-G needle through the biopsy guide, in a transversal section, 5 ml of the unlabeled solution were injected on each side of the prostate, after discarding the possibility of puncturing a blood vessel. The application was performed through a single puncture on each side close to the base, with the solution being distributed between the prostate and the Denonvilliers' fascia, always with ultrasound-guidance (Figure-1). All procedures were performed solely by one of the authors, using an 18-G needle. The mean number of fragments collected per patient was 11.9 in the lidocaine group, and 10.8 fragments in the saline solution group. There was no use of analgesic or concomitant sedation. The biopsies were performed immediately following the injection of the solution.

Upon concluding the procedure, the patients were questioned about pain using the linear visual analogical scale (VAS) from 0 to 10 by the examiner himself (Figure-2).

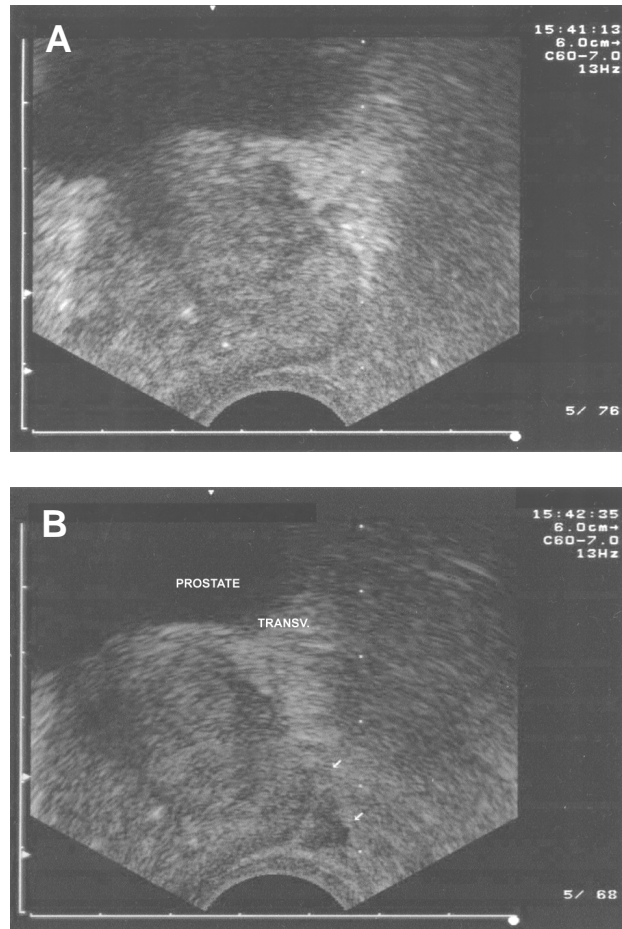


Figure 1 – Ecographic transversal images of the prostate base, pre-injection (A) and post-injection (B) of solution in the periprostatic region.

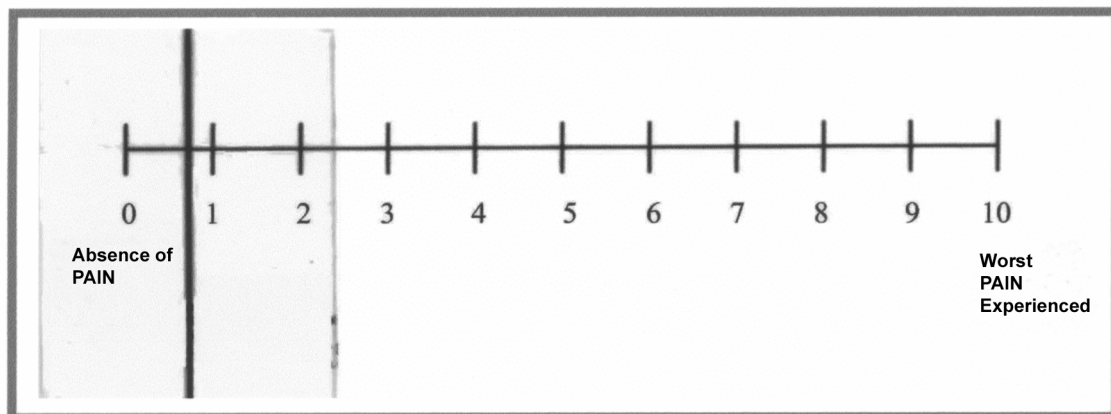


Figure 2 – Visual analogical scale for pain.

Table 1 – Mean and standard deviation for age, prostatic weight as measured by ultrasound, PSA value and number of fragments in groups I and II.

| Parameters | Group I | Group II |
|------------------|--------------|--------------|
| Age | 65.25 ± 4.47 | 62.65 ± 2.52 |
| Prostatic weight | 43.90 ± 5.30 | 42.20 ± 2.24 |
| PSA | 10.86 ± 0.61 | 17.35 ± 3.87 |
| No. of fragments | 11.90 ± 3.45 | 10.80 ± 2.61 |

The statistical analysis employed for assessing pain was the Student's t test, with $p < 0.05$ being significant.

RESULTS

The 20 patients who received lidocaine 2% were assigned in the group I and the remaining 20 who received saline solution 0,9% in the group II.

Age in group I ranged from 53 to 78 (mean 65.25 years) and in group II from 49 to 75 years (mean 62.65). PSA, prostate volume and the number of fragments collected were distributed according to Table-1.

In relation to pain, those patients from the group submitted to biopsy using lidocaine 2% pre-

sented a maximum score of 6, while in the group submitted to biopsy using saline solution, 4 patients of 20 presented a score of 7 and 8 (moderate to strong pain) (Figure-3). Mean score and standard deviation in the lidocaine group were 2.55 ± 2.34 and in the saline solution group were 3.75 ± 2.52 with no statistically significant difference between the groups. The 95% confidence interval was 1.53 to 1.02 for lidocaine and 2.66 to 4.84 for saline solution.

The positivity of biopsies was 55% in group I and 50% in group II.

The complications found were hematuria and anal bleeding, without a predominance of complications between the groups.

COMMENTS

Transrectal ultrasound and prostate biopsy have been used in medical offices for 10 years and no anesthetic protocol has been proposed yet. Despite the prostate biopsy being tolerable to patients without the use of anesthesia there is discomfort and pain (7-9).

The visual analogical scale has been accepted as the best tool for assessing the intensity of pain. It is useful regardless of language and instruction, and

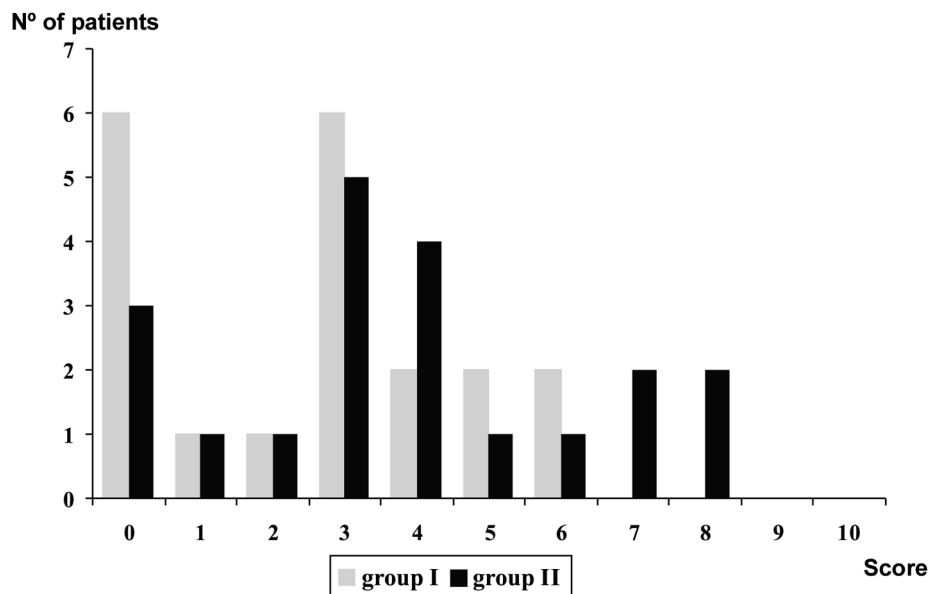


Figure 3 – Individual score for pain in groups I and II.

Table 2 – Mean, standard deviation and 95% confidence interval for pain score by visual analogical scale (VAS) in groups I and II.

| Groups | VAS (Mean and Standard Deviation) | VAS (95% Confidence Interval) |
|--------------------|-----------------------------------|-------------------------------|
| I Lidocaine | 2.55 ± 2.34 (p > 0.05) | 1.53 to 3.57 |
| II Saline solution | 3.75 ± 2.52 (p > 0.05) | 2.66 to 4.84 |

promotes a measure that is sensitive and capable of statistical comparison (10).

The pain associated to the prostate biopsy is caused by the introduction of the rectal probe and by the penetration of the needle into the prostate capsule. Such penetration results in the stimulation of receptors located in the capsule. The prostate innervation derives from the inferior portion of the pelvic plexus (hypogastricus inferior). These nerves cross the lateral edges of the prostate adjacent to the Denonvilliers' fascia as a neurovascular bundle and send small branches to penetrate the prostate capsule (11,12). Based on the knowledge of the innervation and the need to reduce discomfort and pain during prostate biopsy several studies have been published.

Some techniques of periprostatic block have been described with a variable number of punctures. Alavi et al. (5) performed only 1 puncture on each side of the prostate close to the seminal vesicle, as well as Pareek (4). In our study we used one puncture on each side at the prostate base (13), close to the seminal vesicles, following the same technique.

The results of the present study showed that group II presented 4 patients with moderate to strong pain (scores 7 and 8), 20% of patients, while in group I the maximum score for pain was 6. However, no statistical difference was found in the study with the use of lidocaine versus saline solution, despite the mean score being lower in group I (Table-2).

It is important to stress that 75% of patients in this study presented a maximum score for pain of 4, which reduces the number of patients who would more overtly benefit with the use of a periprostatic lidocaine injection. In this aspect the examiner's expertise may play a fundamental role, contributing to a more agile and bearable procedure, instead, less experienced operators can make the examination more

uncomfortable and thus the benefit of lidocaine use would become more evident.

Some studies found in literature showed a benefit with the periprostatic administration of lidocaine for prostate biopsy in decreasing pain (2,6,14,15).

Corroborating our findings, Wu et al. (16) also performed a double-blind randomized study and did not find a statistically significant difference in prostatic block using lidocaine when compared to the placebo group concerning the pain score.

Factors contributing to the lack of statistical difference between the groups possibly were the incomplete blockade of prostatic sensitive fibers, which can be influenced by the blockade technique, that ranges in literature from 1 to 3 punctures on each side, volume e concentration of anesthetic; the discomfort during the introduction of the rectal probe associated to contraction of the external sphincter (14) and the low score for pain in 75% of the patients where the benefit of lidocaine use is not so evident. Another factor that must be considered concerning the lack of statistical significance is the number of patients enrolled in the study, a total of 40 (n = 20), thus results could change with a larger casuistry.

CONCLUSION

Our findings indicated that periprostatic local anesthesia with 2% lidocaine did not show a statistically significant benefit in reducing the pain during transrectal ultrasound-guided prostate biopsy.

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