

COMPARISON OF PAIN PERCEPTION BETWEEN INTRAVENA TRAMADOL INJECTION WITH PERIPROSTATIC LIDOCAINE INJECTION IN TRANSRECTAL ULTRASONOGRAPHY GUIDED PROSTATE BIOPSY PATIENT

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ABSTRACT

Objective: To compare the pain perception between intravenous tramadol administration and PNB technique using lidocaine in TRUS guided prostate biopsy. **Material & Methods:** The design of this study is a prospective randomized clinical trial. The population of this study is BPH patients who will undergo TRUS guided prostate biopsy procedure according to the indication in our center. Randomization was done for the determination of groups 1 and 2. Group 1 was given tramadol injection 100 mg intravenously, while group 2 was given a local injection of lidocaine periprostatic. The Wong-Baker scale directly determined pain perception during the procedure. **Results:** The total samples in this study were 20 samples that met the inclusion and exclusion criteria with 10 samples in each group. The lidocaine group had a lower Wong Baker's pain scale in both probe USG insertion and prostate biopsy than the tramadol group. However, it's not statistically significant ($p=0.089$; $p=0.125$, respectively). **Conclusion:** The use of intravenous tramadol can be used as an alternative anesthetic/analgesic method in prostate biopsy patients. The pain scale of the intravenous tramadol can be compared with periprostatic lidocaine with lesser complications compared to periprostatic lidocaine.

Keywords: Tramadol, lidocaine, TRUS guided prostate biopsy, pain.

ABSTRAK

Tujuan: Membandingkan persepsi nyeri antara pemberian tramadol intravena dengan lidokain periprostatika pada TRUS guided prostate biopsy. **Bahan & Cara:** Desain penelitian ini adalah uji klinik acak bersifat prospektif. Populasi pada penelitian ini adalah semua pasien yang akan menjalani prosedur TRUS guided prostate biopsy yang sesuai dengan indikasi di pusat penelitian kami. Penentuan kelompok 1 dan kelompok 2 dilakukan secara randomisasi. Kelompok 1 diberikan injeksi tramadol intravena 100 mg, sedangkan kelompok 2 diberikan injeksi lidokain lokal secara periprostatika. Skala Wong-Baker digunakan secara langsung untuk menentukan skalanya nyeri saat prosedur dilakukan. **Hasil:** Total sampel pada penelitian ini yang memenuhi kriteria inklusi dan eksklusi ada 20 orang. Kelompok lidokain memiliki skala nyeri Wong-Baker yang lebih rendah dibandingkan dengan kelompok tramadol. Hanya saja, perbedaan tersebut tidak berbeda signifikan ($p=0.089$; $p=0.125$). **Simpulan:** Penggunaan tramadol intravena dapat digunakan sebagai alternatif metode anestesi/analgesia pada pasien yang akan dilakukan prosedur TRUS guided prostate biopsy. Skala nyeri injeksi tramadol dapat dibandingkan dengan lidokain dengan komplikasi yang lebih minimal dibandingkan dengan lidokain.

Kata Kunci: Tramadol, lidokain, TRUS guided prostate biopsy, nyeri.

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INTRODUCTION

Benign prostate hyperplasia (BPH) is a benign enlargement in an adult male. Changes of the prostate that occur in BPH patients including differences in volume and prostate histology which generally occur in men over 50.¹ Examination that can be done to diagnose BPH are by anamnesis,

digital rectal examination, PSA and PSAD. Also, transrectal ultrasound (TRUS) guided prostate biopsy to determine the histopathology of the prostate. TRUS guided prostate biopsy has become the gold standard for the early diagnosis of prostate carcinoma in developing countries.²

TRUS guided prostate biopsy is safe and can be done in outpatients setting. However, this

procedure often causes complaints of discomfort or even pain. About 65-90% of patients feel pain during the process, and almost 20% feel significant pain and refuse to do a repeat biopsy. Several analgesics or anesthetic techniques have been studied, one of which is periprostatic nerve block (PNB) and intravenous tramadol. Some studies state that PNB is the best anesthetic technique for now because of its effectiveness in reducing pain when the prostate biopsy is done, it's just that there are some patient's conditions that do not allow the PNB technique to be carried out, so many researchers have emerged about alternative analgesic or anesthetic technique other than PNB.

OBJECTIVE

To compare the pain perception between intravenous tramadol administration and PNB technique using lidocaine in TRUS guided prostate biopsy.

MATERIAL & METHODS

The design of this study is a prospective randomized clinical trial with aims to prove the difference in pain perception between intravenous tramadol injection with lidocaine PNB in TRUS guided prostate biopsy that assessed using Wong-Baker score. This study has received an ethical feasibility certificate at Soetomo General Hospital Surabaya with number 0913/KEPK/I/2019.

The population of this study is BPH patients who will undergo TRUS guided prostate biopsy procedure according to the indication in our center (Instalasi Minimal Invasive Urology (IIU), Soetomo General Hospital Surabaya). The indications are from digital rectal examination found a hard prostate consistency, a prostate nodule, or an asymmetrical prostate; hypoechoic or hyperechoic lesions are found during TRUS examination; PSA value between 4-10 ng/mL with PSAD value ≥ 0.15 ; PSA value >10 ng/mL.

The inclusion criteria of this study were willing to participate as the object of the study, patients suspected to have a prostate malignancy according to TRUS guided prostate biopsy indication in our center, and age below 70 years. The exclusion criteria were patients refused as the object of the study, patients who had prostate biopsy previously, had prostatitis, infection of the anus, hemorrhoids and anal fissure, currently using analgesics or anticoagulant and antiplatelet, have a history of lidocaine and/or tramadol allergies also suffer from blindness or cataracts.

Patients who fit inclusion criteria were included in the study and sign the informed consent before the procedure take place. A prophylactic antibiotic was administered before the TRUS guided prostate biopsy was done. Randomization was done for the determination of groups 1 and 2. Group 1 was given tramadol injection 100 mg intravenously, while group 2 was given a local injection of lidocaine periprostatic, which is in the lateral area of the junction between seminal vesicles and base of the prostate, using 22 G and 7 inch long spinal needles under the guidance of 7 MHz TRUS. The Wong-Baker scale directly determined pain perception during the procedure.

Data will be analyzed descriptively and analytically. Before hypothesis testing, the normality of data distribution was tested using the Shapiro-Wilk test. If the data distribution is normal ($p>0.05$), the analysis was continued by the t-independent test, but if not normal, the analysis was continued by the Mann-Whitney test. The result of the analysis was significant if the p -value <0.05 .

RESULTS

This study was conducted from January to March 2019. The total samples in this study were 20 samples with 10 samples in each group. The sample characteristics were shown in table 1.

The normality test for both Wong Baker's variables in the two study groups had a value of

Table 1. Sample study characteristics.

Variable	Tramadol (Group 1)	Lidocaine (Group 2)	p-value
Age (Mean \pm SD)	60.40 \pm 5.461	61.30 \pm 3.889	0.676
PSA (Median (Min-Max))	16.79 (6.6-136.3)	7.73 (4.76-121.34)	0.140
Prostate Volume (Median (Min-Max))	52.45 (20.0-81.0)	36.0 (22.3-99.0)	0.364

Table 2. Wong-Baker pain scale in each group.

Variabel	Tramadol (Group 1)	Lidocaine (Group 2)	p-value
Wong-Baker on USG probe insertion	3.5 (3-4)	3 (2-4)	0.089
Wong-Baker on prostate biopsy	2 (1-3)	1.5 (1-2)	0.125

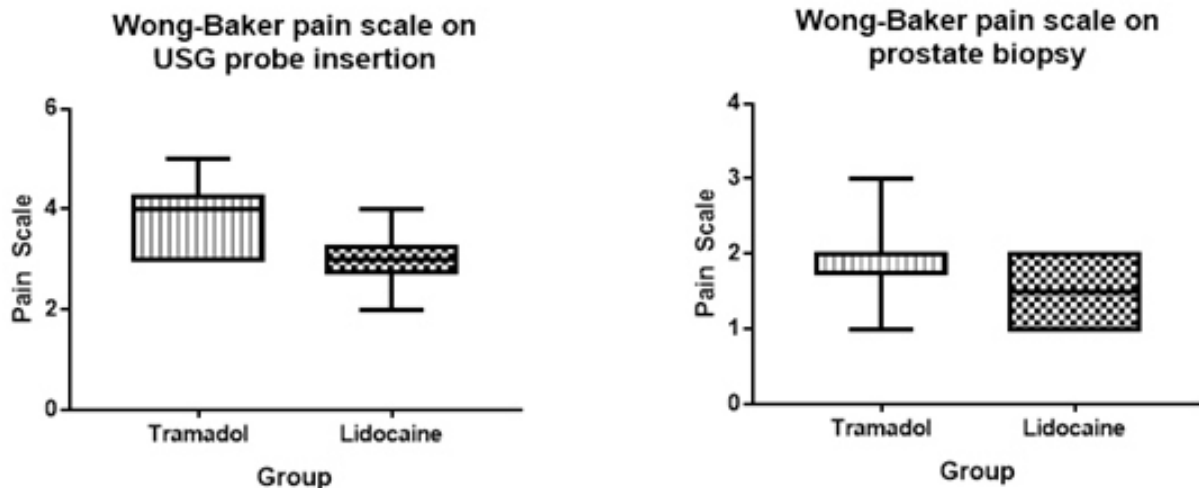


Figure 1. Wong-Baker pain scale on USG probe insertion and prostate biopsy.

$p < 0.05$, it means that in both group the data is not normally distributed (Table 2). Therefore, the analysis continues with the Mann-Whitney test.

Descriptively, the lidocaine group had a lower Wong Baker's pain scale in both probe USG insertion and prostate biopsy than the tramadol group. However, after being analyzed using the Mann-Whitney test, there was no significant difference in the two study groups ($p = 0.089$; $p = 0.125$, respectively).

DISCUSSION

Since the development of the PSA examination, many patients were diagnosed with prostate cancer at an early stage. In the early 1990s, there were at least five major studies that proved PSA was better than digital rectal examination or other examination in diagnosing prostate cancer. The combination of PSA, digital rectal examination and TRUS guided prostate biopsy was the most effective way to detect prostate cancer until now.^{1,3}

In our center, the indication of the prostate biopsy were: 1) hard prostate consistency, palpable

prostate nodule or an asymmetrical prostate were found in digital rectal examination, 2) hypoechoic or hyperechoic lesions were found on TRUS examination, 3) PSA value between 4-10 ng/mL with PSAD value ≥ 0.15 , 4) PSA value > 10 ng/mL.

TRUS guided prostate biopsy is a simple and quite safe procedure, but sometimes the patients still felt painful and make them uncomfortable. Pain during TRUS guided prostate biopsy can originate from two sources, first one was from the insertion of the USG probe into the rectum which is innervated by inferior branch of the pudendal nerve. The second was from needle biopsy into the prostate, which is innervated by the neurovascular bundles (NVB) between the posterolateral prostate and the rectum.⁴

In this study, the anesthetic/analgesic method that being studied and analyzed were the intravenous tramadol injection and the periprostatic lidocaine injection. There were no significant differences in Wong Baker's pain scale on both occasions (USG probe insertion and needle puncture in prostate biopsy) between tramadol and lidocaine group. These results suggest that intravenous tramadol has the same effectiveness as periprostatic

lidocaine injection in reducing pain when inserting a USG probe and needle puncture in a prostate biopsy. This result is also in line with the results of a study by Öbek et al. Öbek et al. concluded that intravenous tramadol injection gave the same effective results as the PNB method in managing pain when the prostate biopsy was performed.⁵ Olmez et al. and Seçkiner et al. reported that tramadol had a better pain control than placebo.⁶⁻⁷

The use of opioids in addition to PNB showed promising results compared to PNB treatment alone. The study by Pendleton et al. compared the efficacy between the combination of tramadol and paracetamol with placebo and showed that the combination was better than the placebo by reducing the pain scale by average 2.3 points.⁸ Tramadol also reduced pain that associated with the insertion of USG probe and needle puncture, but not significantly different compared to PNB alone.⁹ Although a few studies showed that the administration of tramadol did not give a superior result compared to PNB alone^{5,10,11}, the anxiolytic effects of opioids, especially tramadol, cannot be ignored and indications for their use must be investigated. Another interesting issue is that the use of intravenous tramadol in prostate biopsy is stated to be very safe because it does not cause additional complications such as those found in patients who are taking periprostatic lidocaine injection.⁵

The limitation of this study are the small sample in each group that may not represent the population and also the absence of a control or placebo group so that it cannot evaluate the effectiveness of lidocaine and tramadol compared to placebo. The placebo group is indeed challenging to implement because it collides with the ethical feasibility of clinical trial research in humans. Also, the study did not evaluate the complications of each treatment group. Further research which using larger sample, the placebo group and that evaluate the complications as the secondary outcome is needed to clearly understand the role of various analgesic or anesthetic method in TRUS guided prostate biopsy.

CONCLUSION

The use of intravenous tramadol can be used as an alternative anesthetic/analgesic method in prostate biopsy patients. The pain scale of the

intravenous tramadol can be compared with periprostatic lidocaine with lesser complications compared to periprostatic lidocaine.

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