

PREOPERATIVE INTRAVENOUS TRAMADOL FOR PERCUTANEOUS NEPHROSTOMY TO REDUCE INTRAOPERATIVE PAIN

¹Harris Oetama, ¹Aaron Tigor Sihombing.

¹Department of Urology, Faculty of Medicine/Padjajaran University, Hasan Sadikin General Hospital, Bandung.

ABSTRACT

Objective: To evaluate the effect of additional preoperative intravenous tramadol for reducing intraoperative pain. **Material & Methods:** This study was a double blind randomized controlled study from April - June 2017 in Urology Department in Hasan Sadikin Hospital. Inclusion criteria were cervical cancer patients who were performed percutaneous nephrostomy. Exclusion criteria were patients with infection and pain before the procedure. Written informed consent was obtained from each patient and the study protocol was approved by the local human ethics committee. The subjects were randomly divided into 2 groups. Group A were given 100 ml dripped normal saline 1 hour before the procedure and intraoperative local anesthesia with lidocaine 2% and group B were given preoperative intravenous tramadol 100 mg dripped within 100 ml of normal saline 1 hour before the procedure and intraoperative lidocaine 2%. Visual Analogue Score (VAS) were used to evaluate the pain score. All calculation were done using SPSS version 20. **Results:** There were 60 cervical cancer patients who were performed percutaneous nephrostomy (29 patients in Group A and 31 patients in Group B). The mean age in group A was 48.86 ± 8.524 (years old) and the mean age in group B was 51.90 ± 6.76 (years old). The median VAS score in group A was 4, with the minimum score was 2.00, maximum score was 6.00. The median VAS score in group B was 2, with the minimum score was 0.00, maximum score was 4.00. In group A, 11 patients (18.3%) were mild pain, 16 patients (26.7%) were moderate pain, 2 patients (3.3%) were severe pain. In group B, 29 patients (48.3%) were mild pain, 2 patients (3.3%) were moderate pain, 0 patients (0.0%) were severe pain. Based on Mann-Whitney U test, there was a significant pain score reduction in group B compared to group A ($p=0.0001$). There were no significant differences in the prevalence or proportion of patients with nausea and vomiting in group A and B (10% and 12%, respectively). There were no other adverse events and other complications observed in both groups. **Conclusion:** Preoperative intravenous tramadol significantly reduced intraoperative pain in cervical patients who were performed percutaneous nephrostomy compare to those who were only given intraoperative local anesthesia.

Keywords: Tramadol, percutaneous nephrostomy, visual analogue score.

ABSTRAK

Tujuan: Mengetahui pengaruh penambahan tramadol intravena sebelum tindakan nefrostomi perkutan dalam menurunkan nyeri intra operasi. **Bahan & Cara:** Penelitian ini adalah penelitian prospektif randomized controlled study (RCT) dari April - Juni 2017 di Departemen Urologi RSUP Dr. Hasan Sadikin di Bandung. Kriteria inklusi adalah pasien kanker serviks yang dilakukan nefrostomi perkutan. Kriteria eksklusi adalah pasien dengan infeksi dan nyeri sebelum tindakan. Subjek dibagi secara acak menjadi 2 kelompok. Kelompok A hanya diberikan NaCl 0.9% 100 cc drip dalam 1 jam dan anestesi lokal lidocaine 2%. Kelompok B diberikan tramadol intravena 100 mg drip dalam NaCl 0.9% 1 jam sebelum tindakan dan anestesi lokal lidocaine 2%. Visual Analogue Score (VAS) digunakan untuk menilai skor nyeri. Hasil penelitian dianalisa menggunakan SPSS versi 20. **Hasil:** Terdapat 60 pasien kanker serviks yang dilakukan nefrostomi perkutan. Rerata usia pada kelompok A adalah 48.86 ± 8.52 tahun dan rerata usia pada kelompok B adalah 51.90 ± 6.76 tahun. Median skor VAS pada kelompok A adalah 4, dengan skor minimum 2, skor maksimum 6. Median skor VAS pada kelompok B adalah 2, dengan skor minimum 0, skor maksimum 4. Pada kelompok A, 11 pasien (18.3%) nyeri ringan, 16 pasien (26.7%) nyeri sedang, 2 pasien (3.3%) nyeri hebat. Pada kelompok B, 29 pasien (48.3%) adalah nyeri ringan, 2 pasien (3.3%) nyeri sedang, 0 pasien (0.0%) nyeri hebat. Dari tes Mann-Whitney U, terdapat perbedaan bermakna penurunan skor nyeri pada grup B dibandingkan dengan grup A. ($p=0.0001$). Tidak terdapat perbedaan bermakna prevalensi kejadian tidak menyenangkan (mual dan muntah) akibat tramadol pada grup A (10%) dan grup B (12%). Tidak ditemukan komplikasi lain pada kedua grup. **Simpulan:** Penambahan tramadol intravena sebelum nefrostomi perkutan pada pasien kanker serviks menurunkan secara bermakna skor nyeri intra operasi dibandingkan dengan kelompok yang hanya diberikan anestesi lokal.

Kata kunci: Tramadol, percutaneous nephrostomy, visual analogue score.

Correspondence: Harris Oetama, Department of urology, Faculty of Medicine/Padjajaran University, Hasan Sadikin General Hospital, Bandung. Jl. Pasteur No.38 Bandung. Phone :+62 22 2039141. Mobile phone: 08112254545. Email: dokter_harris@yahoo.com.

INTRODUCTION

The International Association for the Study of Pain (IASP) defined pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.¹

Percutaneous nephrostomy (PCN) is a passageway that is introduced percutaneously into the renal pelvis-calyxes system that can later be maintained by a tube, stent or catheter.^{2,3} PCN might cause tissue damage from the skin until pelvis-calyxes system and cause moderate until severe pain.⁴

In one of the previous study done by Karim et al., in 2010, there were 86% (108 out of 126) patients who complained local pain of varying degrees.⁵

A study done by Tjahjodjati et al., in 2015, 10 of 79 patients (13%) who were performed percutaneous nephrostomy, complained local pain during and after the procedure.⁶

Pain might cause the procedure becomes uneasy to perform, other adjacent organs injury during puncturing the renal calyx and renal function deterioration.⁷

Tramadol is a central agonist opioid usually used for moderate and severe post operative pain.⁸

In this study, we evaluate the effect of preoperative intravenous tramadol to reduce intra-operative pain in percutaneous nephrostomy.

OBJECTIVE

To evaluate the effect of additional pre-operative intravenous tramadol for reducing intra-operative pain.

MATERIAL & METHOD

This study is adouble blind randomized controlled study from April - June 2017 in Urology Department in Hasan Sadikin Hospital Bandung. Inclusion criteria were cervical cancer patients who were performed percutaneous nephrostomy.

Exclusion criteria were patients with infection and pain before the procedure. Written informed consent was obtained from each patient and the study protocol was approved by the local human ethics committee. The subjects were randomly divided into 2 groups. Group A were given 100 ml dripped normal saline 1 hour before the

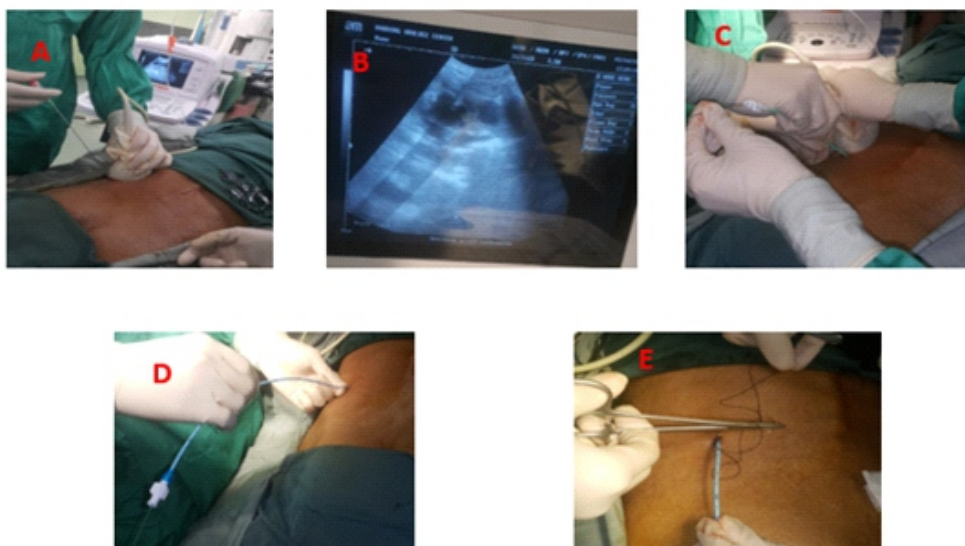


Figure 1. A. Insertion of 22F nephrostomy needle, B. Targeting the renal unit guided by USG, C. Pathway dilatation using Seldinger technique, D. Insertion of 8F pigtail catheter, E. Fixation of pigtail catheter.

procedure and intraoperative local anesthesia with lidocaine 2% and group B were given preoperative intravenous tramadol 100 mg dripped within 100 ml of normal saline 1 hour before the procedure and intraoperative lidocaine 2%.

A percutaneous nephrostomy was performed under local anesthesia in all patients. Patients were positioned in prone position, the selected renal unit was punctured under ultra-sonographic control with a 22-gauge nephrostomy needle and the pathway was dilated according to the Seldinger technique. Next, an 8F pigtail nephrostomy catheter was inserted and its tip was positioned inside the renal pelvis.

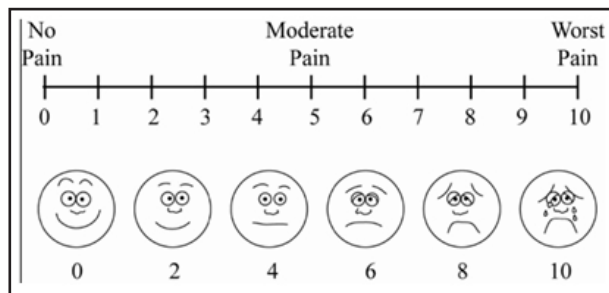


Figure 2. Visual analogue scale score.⁹

Table 1. Characteristic of general population.

Total Population N=60	
Control Group (Group A) N=29	Mean Age = 48.86 ± 8.524 (years old) Median VAS Score = 4 Range 2-6
Treatment Group (Group B) N=31	Mean Age = 51.90 ± 6.76 (years old) Median VAS Score = 2 Range 0-4

Table 2. Distribution of VAS score

			VAS Score			Total
			Mild	Moderate	Severe	
Group	Group A	Count	11	16	2	29
		% of Total	18.3%	26.7%	3.3%	48.3%
	Group B	Count	29	2	0	31
		% of Total	48.3%	3.3%	0.0%	51.7%
Total		Count	40	18	2	60
		% of Total	66.7%	30.0%	3.3%	100.0%

Table 3. Comparison of VAS score

	Control Group N = 29	Tramadol Group N = 31	p value
Age	48.86 ± 8.524	51.90 ± 6.76	
Median Intraoperative Vas	4	2	p=0.0001 ¹

¹Mann-Whitney U test

Visual Analogue Score (VAS) were used to evaluate the pain score. All calculation were done using SPSS version 20.

RESULTS

There were 60 cervical cancer patients who were performed percutaneous nephrostomy (29 patients in Group A and 31 patients in Group B). The mean age in group A was 48.86 ± 8.524 (years old) and the mean age in group B was 51.90 ± 6.76 (years old). The median VAS score in group A was 4, with the minimum score was 2.00, maximum score was 6.00. The median VAS score in group B was 2, with the minimum score was 0.00, maximum score was 4.00 (Table 1).

In group A, 11 patients (18.3%) were mild pain, 16 patients (26.7%) were moderate pain, 2 patients (3.3%) were severe pain. In group B, 29 patients (48.3%) were mild pain, 2 patients (3.3%) were moderate pain, 0 patients (0.0%) were severe pain (Table 2).

Based on Mann-Whitney U test, there was a significant pain score reduction in group B compared to group A (p≤0.0001).

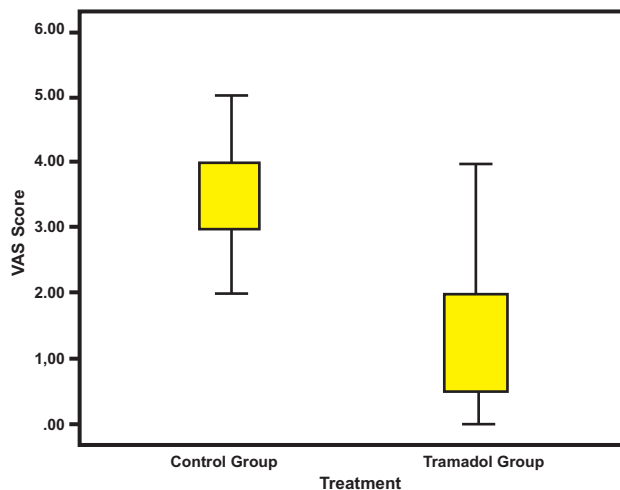


Figure 3. Box plot of VAS score.

There were no significant differences in the prevalence or proportion of patients with nausea and vomiting in group A and B. (10% and 12%, respectively). There were no other adverse events and other complications observed in both groups.

DISCUSSION

Pain is one of the most common problem encountered during percutaneous nephrostomy procedure. Previous study have shown that most patients complained pain during the procedure despite local anesthesia given. This kind of pain might cause problems during the procedure so additional analgesic before the procedure is needed to reduce intraoperative pain.

We chose tramadol as an additional preoperative analgesic because it is an opioid central agonist analgesic that works very well for moderate and severe intraoperative pain. We chose cervical cancer as our subjects to avoid any bias due to inhomogeneous subjects. We exclude patients with pain and infection to avoid any bias in evaluating the pain score.

All subjects were done USG guided PCN instead of fluoroscopy guided PCN to avoid radiation exposure to both patients and operator. All procedures were done using the same technique and same nephrostomy pigtailed.

We found 60 patients divided into 2 groups (29 patients in control group and 31 patients in tramadol group). Tramadol group had a significantly lower VAS score compared to control group $p=0.0001$ (Table 3).

Based on this study, we suggest all Urologist to add tramadol as an additional preoperative analgesic to perform PCN for reducing intraoperative pain and hopefully decreasing intraoperative time and complications.

CONCLUSION

Preoperative intravenous tramadol significantly reduced intraoperative pain in cervical patients who were performed percutaneous nephrostomy compare to those who were only given intraoperative local anesthesia.

REFERENCES

1. International Association for the Study of Pain: Pain Definitions. Retrieved 12 January 2015. Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Derived from the need of a taxonomy. Pain. 1979;6(3):247–8.
2. Goodwin WE, Casey WC, Woolf W. Percutaneous trocar (needle) nephrostomy in hydronephrosis. J Am Med Assoc. 1955;157:891–4.
3. Barbaric ZL. Percutaneous nephrostomy for urinary tract obstruction. AJR. 1984; 143: 803–9.
4. Pedersen JF. Percutaneous nephrostomy guided by ultrasound. J Urol. 1974; 112: 157–9.
5. Karim R, Sengupta S, Samanta S. Percutaneous nephrostomy by direct puncture technique: An observational study. Indian J Nephrol. April 2012; 20(2).
6. Rizki DA, Tjahjodjati. Complications of percutaneous nephrostomy using pigtail nephrostomy tube size of 8 french versus pediatric nasogastric tube size of 8 french in urolithiasis patients in Hasan Sadikin Hospital Bandung. Presented at 39th Annual Scientific Meeting of Indonesian Urological Association (ASMIUA) in 7-11th December 2016.
7. Hausegger KA, Portugaller HR. Percutaneous nephrostomy and antegrade ureteral stenting: Technique--indications--complications. European Radiology. 2006; 16(9): 2016–30. doi:http://dx.doi.org/10.1007/s00330-005-0136-7
8. Grond, Stefan, Sablotzki, armin. Clinical Pharmacology of Tramadol. Clinical Pharmacokinetics. 2004; 43(13):879–923.
9. Banos JE, Bosch F, Canellas M. Acceptability of Visual Analogue Scales in the clinical setting: a comparison with Verbal Rating Scales in post-operative pain. Methods Find Exp Clin Pharmacol. 1989; 11:123e–7.