

# PREOPERATIVE KETOROLAC EFFECT ON POSTOPERATIVE PAIN ON TURP PATIENTS

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## ABSTRACT

**Objective:** The aim of this study is to study the effect of preoperative Ketorolac on postoperative pain after transurethral prostatectomy at Sardjito Hospital Yogyakarta. **Material & Methods:** We divided benign prostatic hyperplasia patients, from October 2011 until February 2012 into two groups. Group I was given Ketorolac 30 mg intravenously twice daily starting one day before operation and in the morning before procedure. Group II did not receive Ketorolac preoperatively. Patients underwent transurethral operation with spinal anesthesia. We assessed postoperative pain at 24 hours using Visual Analogue Scale (VAS). **Results:** Twenty four patients were included in this study with mean age 66 years old with the youngest 45 years old and the oldest 80 years old (SD 8,77744). Group I (17 patients), VAS score 1 to 7 with median 3 and mean 3,4118 (SD 1,66053). Group II (7 patients) VAS score 1 to 8 with median 3 and mean 3,8571 (SD 2,8357). We count it using Mann-Whitney U ( $p = 0,951$ ). **Conclusion:** There is no difference in post-operative pain after transurethral prostatectomy with preoperative ketorolac administration.

**Keywords:** Ketorolac, bupivacaine, visual analogue scale, transurethral prostatectomy.

## ABSTRAK

**Tujuan penelitian:** Tujuan dari penelitian ini adalah untuk mengetahui pengaruh ketorolac pre-operasi pada nyeri pasca prostatektomi transuretra di RS Sardjito Yogyakarta. **Bahan & Cara:** Kami membagi pasien BPH, dari Oktober 2011 sampai Februari 2012, dalam dua kelompok. Kelompok I diberikan Ketorolac 30 mg dua kali sehari, sehari sebelum operasi dan pagi sebelum operasi. Kelompok II tanpa ketorolac pre-operasi. Pasien menjalani operasi transurethra dengan anestesi spinal. Setelah 24 jam post-operasi, kami menganalisa nyeri menggunakan Visual Analogue Scale (VAS). Kemudian kami membandingkan antara kelompok I dan kelompok II. **Hasil penelitian:** 24 pasien dalam penelitian ini memiliki mean usia 66 tahun, dengan usia termuda 45 tahun dan tertua 80 tahun (sd 8,77744). Kelompok I (17 pasien), nilai VAS 1 sampai 7 dengan median 3 dan mean 3,4118 (sd 1,66053). Kelompok II (7 pasien) nilai VAS 1 sampai 8 dengan median 3 dan mean 3,8571 (sd 2,8357). Kami menghitung menggunakan uji Mann-Whitney U ( $p = 0,951$ ). **Simpulan:** Tidak terdapat perbedaan nyeri post-operasi antara pasien transurethral prostatectomy yang diberikan ketorolac dan tanpa ketorolac pre-operasi.

**Keywords:** Ketorolac, bupivacaine, visual analogue scale, prostatektomi transuretra.

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## INTRODUCTION

Pain is often not assessed adequately in approximately half of all surgery patients.<sup>1,2</sup> A new concept is to eliminate pain by administering analgesics before the pain stimulus, which is more effective than when given after a painful stimulus. This is the principle of pre-emptive analgesia.<sup>1</sup>

Postoperative pain can be controlled with the use of anesthetic blocks, opioids, non-steroidal anti-inflammatory drugs or a combination of it.

The concept of providing analgesic before surgery is to reduce the sensitization of the nociceptive system. Transmission of pain brought on by tissue damage that stimulates the peripheral and central pathways. Pain signals from damaged tissue

activate nociceptive signals to initiate cascade system and then launch both the central and peripheral pathways. It will increase the next stimulus response to reinforcing the perception of pain.<sup>1,2,3</sup>

Because a protective effect on nociceptive pathways, preemptive analgesia is more effective than providing analgesic that began after surgery. The consequences postoperative pain can be reduced and chronic pain that develops can be prevented.

Pain can be defined as an unpleasant sensation and emotional experience associated with tissue damage is occurring or will occur. Pain is the body's warning caused by threat, so individu can encourage and learn quickly to take a rest. Tissue damage that occurs can caused by infection, mechanic, chemical damage and malignancy. Pain receptors is in all of the nerve endings.<sup>1</sup>

Analgesic drug is a drug that eliminates sensation of pain without loss of consciousness. Analgesics can work on the central nervous system (Opium, Morphine) and peripheral nerve (Paracetamol, non-steroidal anti-inflammatory drugs). Analgesic drug selection always refer to the WHO pain ladder.<sup>2,3</sup>

Visual Analog Scale (VAS) is an instrument that measure the sensation of pain, a horizontal line with the numbers 1 to 10 from the left which presents the spectrum of no pain, mild moderate to severe. Patients mark the line representing pain sensation.<sup>1,4</sup>

Painful or injurious (noxious) stimuli to the body are detected by the free endings of peripheral nerves (primary afferent neurons), which called nociceptors. The peripheral terminals of nociceptors act as transducers, converting chemical, mechanical or thermal energy at the site of the stimulus to

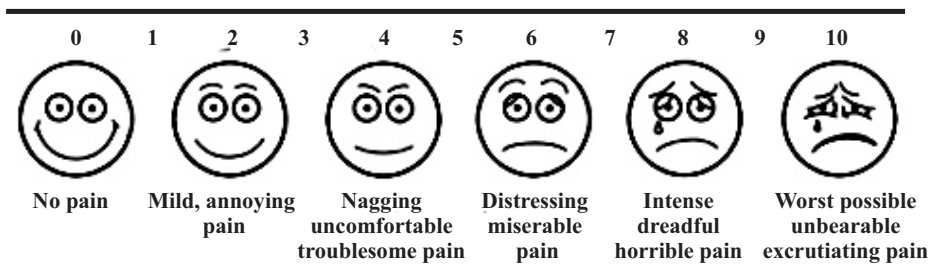


Figure 1. Visual analog scale.<sup>1</sup>

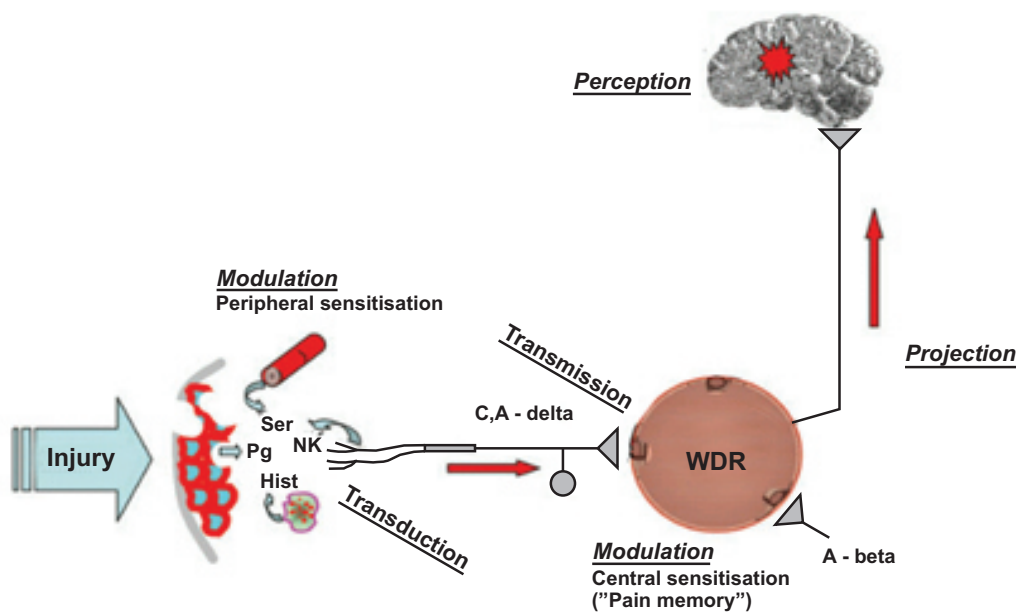


Figure 2. Tissue damage triggers pain in the peripheral and central.<sup>6</sup>

electrical activity, which is then conducted to the dorsal horn of the CNS. Pain associated with tissue damage results in prolonged modulation of the somatosensory system, with increased responsiveness of both peripheral and central pain pathways. Experimental evidence suggests to prevent the neurophysiological and biochemical consequences of a noxious input to the CNS rather than to begin treatment when these consequences are already established. So prevention of post-operative pain may be more effective than treatment.<sup>4-10</sup>

Working mechanism of non-steroidal anti-inflammatory drugs is blocking cyclooxygenase enzyme, so production of prostaglandins decreased. Prostaglandins are chemicals that facilitate pain receptor.<sup>4</sup>

## OBJECTIVE

The purpose of this research is to study the effect of Ketorolac preoperation in perceived post operative pain in BPH patients underwent TURP surgery.

## MATERIAL & METHOD

This study is a cross-sectional, prospective, case-control, which done to know is there any difference in postoperative pain between BPH patient which administered analgesic preoperatively and control (not given analgesic preoperatively) whose underwent TURP at Sardjito Hospital Yogyakarta. The study was conducted between the period October 2011 to February 2012.

Criteria for inclusion are 1) Willing to follow the study by signing the consent blank, 2) Patients BPH, 3) TUR surgery with spinal anesthesia with Bupivacaine 0,5%. The exclusion criteria is cancer patients in certain body parts.

The sample was divided into samples with treatment (Group I) and control (Group II). Group I were patients with BPH or suspected prostate Ca, administered Ketorolac intravenous injection 2 x 30

mg prior to surgery for one day before surgery and morning on the day of surgery. Group II were patients with BPH or suspected prostate Ca without analgesic given before surgery. TURP surgery patients with spinal anesthesia using Bupivacaine 0,5%. Measurement of pain sensation assessed preoperatively, day 0 and day 2 after surgery by using a Visual Analog Scale (VAS). Then analyzed whether there were significant differences between groups I and II. When anatomical pathology results showed that prostate ca including exclusion criteria.

Data were analyzed using the Mann Whitney-U test aimed at independent samples with the same population parameter. Statistical calculations performed using the IPSS 15.

## RESULTS

Seventeen BPH patients given ketorolac analgesic injection of 2 x 30 mg for one day before surgery and morning on the day surgery transurethral resection of the prostate, and 7 patients without given preoperative analgesic. Samples characteristic, the oldest patients was 80 years old and the youngest was 45 years old (mean 66 year standard deviation 8,77744).

The pain felt by the patient at 24 hours after surgery ranged from VAS score of 1 to 7 with median 3 and mean 3,4118 (standard deviation 1,66053), and patients without treatment VAS score between 1 and 8 with a median of 3 and a mean of 3,8571 (standard deviation 2,8357) (table 1).

**Table 2.** Calculation Mann Whitney-U.

|                                 |          |
|---------------------------------|----------|
| Mann-Whitney U                  | 58,500   |
| Wilcoxon W                      | 211,500  |
| Z                               | -,064    |
| Asymp. Sig. (2-tailed)          | ,949     |
| Exact Sig. [2* (1-tailed Sig.)] | ,951 (a) |

a. Not corrected for ties.

b. Grouping variable: Treatment and control.

**Table 1.** Distribution of the control group.

| Group                                | n  | Mean   | Std. Deviation | Min  | Max  | Median |
|--------------------------------------|----|--------|----------------|------|------|--------|
| I (given pre-operative ketorolac)    | 17 | 3,4118 | 1,66053        | 1,00 | 7,00 | 3,0000 |
| II (without pre-operative ketorolac) | 7  | 3,8571 | 2,85357        | 1,00 | 8,00 | 3,0000 |

## DISCUSSION

The concept of providing analgesic before surgery (preemptive analgesia) is still a controversy. Many research methods of research and different types of analgesics showed different results. In this study group I (with the analgesics preoperatively) the mean VAS score 3,4118 (standard deviation 1,66053) and median of 3. Whereas group II the mean VAS score 3,8571 (standard deviation 2,8357) and median 3. After calculating the Mann Whitney-U p value 0,951 (greater than 0,05) which means that the difference is not significant.

Thus there is no significant difference postoperative pain among patients who received Ketorolac preoperatively and were not given analgesics preoperatively.

## CONCLUSION

In this study, there is no significant differences on postoperative pain among patients given injection of Ketorolac intravenous 2 x 30 mg preoperatively and not given analgesic preoperatively.

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