Results of analgesia for patients after transurethral resection of the prostate at 108 Military Central Hospital

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Summary

Objective: To evaluate the pain relief treatment for patients after transurethral prostatectomy in general and the effectiveness of patient-controlled analgesia (PCA). *Subject and method*: Including 124 patients undergoing transurethral resection of benign prostate hyperplasia at 108 Military Central Hospital from June 2023 to June 2024. Study design: Descriptive case series, with subgroups for comparison. Group 1 included 92 postoperative patients who received pain relief with PCA combined with conventional analgesics. Group 2 included 32 patients who received pain relief with conventional analgesics only. *Result*: Some characteristics of patients in groups 1 and 2: Mean age 72.4 and 72.4, BMI 22.2 and 22.3, prostate mass 64.2 and 69.5 grams, mean postoperative urethral catheterization 4.1 and 4.0 days, no statistically significant difference between the 2 groups (p>0.05). The mean VAS scores of group 1 during the 3 postoperative days were statistically significantly lower than those of group 2. Group 1 had a statistically significant lower pain level than group 2 on the first and second day after surgery. Nausea/vomiting symptoms were recorded on day 1 in groups 1 and 2 at 2.2% and 6.3%, respectively, but the difference was not statistically significant; in addition, no other adverse symptoms related to pain medication appeared in the 2 groups. *Conclusion*: The combination of PCA and conventional analgesics has better pain relief than regimens using only conventional analgesics. PCA is an effective and safe method in pain relief for patients after transurethral resection of the prostate.

Keywords: Transurethral resection of the prostate, patient-controlled analgesia.

I. BACKGROUND

Transurethral resection of the prostate (TURP) is a common surgical treatment for severe obstructive lower urinary disorders due to benign prostatic hyperplasia. Although TURP has many advantages and has replaced open surgery in most cases, inflammatory response of the prostatic cavity, bladder spasm pain, and especially catheter-related bladder discomfort (CRBD), still exists. Postoperative urethral catheter can easily cause urge to urinate, urethral pain, lower abdominal pain, causing a lot of inconvenience to patients, reducing patient satisfaction, affecting surgical results and care[1, 2].

Many methods and medications have been proposed to reduce the incidence and severity of postoperative pain. However, there are no uniform standards or consensus guidelines. Many authors believe that a multimodal approach to pain prevention and management including anesthesia, postoperative care (reducing the volume of the Foley catheter's cuff, reducing compression), and appropriate perioperative medication management contribute to improving patient recovery and surgical outcomes[2, 3].

At 108 Military Central Hospital, we apply several different pain relief methods after TURP surgery with the desire to achieve the best results

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for patients. This study aims to evaluate the results of pain treatment for patients after TURP surgery, compare the effectiveness of the multimodal analgesic regimen of intravenous fentanyl (patient-controlled analgesia - PCA) combined with conventional analgesics (paracetamol, non-steroids) and the regimen using only conventional analgesics (paracetamol, non-steroids, opioids) without PCA.

II. SUBJECT AND METHOD

2.1. Subject

Including 124 patients undergoing transurethral resection of the prostate due to benign prostatic hyperplasia at 108 Military Central Hospital, from June 2023 to June 2024. *Inclusion criteria*: Patients undergoing TURP with spinal anesthesia; medical records with complete study information.

Patient Controlled Analgesia (PCA) allows the patients to give themself controlled doses of pain medicine through an electronic pump. The goal of PCA is to use short-term strong pain relief to help them get back to the normal routine as soon as possible[4].

Figure 1. Automed PCA

(Source: 108 Hospital's operating room)

In principle, PCA is appropriate for all patients after TURP and is discussed with the anesthetist before performing it. In cases where PCA is not performed, it is because the patient does not agree to perform the technique.

2.2. Method

Convenience sampling, case series descriptive study design, with subgroups for comparison. We divided the patients into 2 groups: Group 1 included 92 patients treated with intravenous fentanyl patient-controlled analgesia (PCA) combined with conventional analgesics (paracetamol, non-steroids); group 2 included 32 patients treated with postoperative analgesics (paracetamol, non-steroids, opioids) and no PCA.

The research indicators include some clinical and paraclinical characteristics, post-operative developments; pain assessment by visual analog scale (VAS); recording some adverse effects of analgesics: Nausea - vomiting, rash, and respiratory failure. The pain scale is pinned to the medical record; nurses evaluate and record daily. Collect data for the first 3 days after surgery.

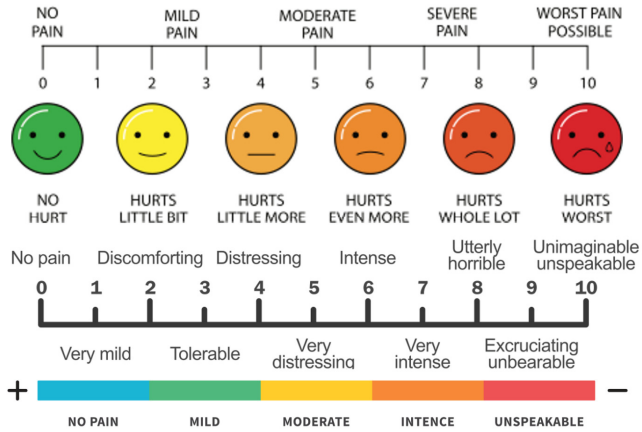

Figure 2. Visual analog scale

Data were collected according to a unified form; statistical processing was performed using SPSS 22.0 software: calculating mean ± standard deviation (X ± SD) for continuous variables, percentage for nominal variables; comparing proportions using Fisher's Exact test; comparing mean values using Independent sample t-test for normally distributed

variables and Mann-Whitney test for non-normally distributed variables.

2.3. Research ethics

This is a descriptive observational study, collecting patient data through medical records. Postoperative care of patients after transurethral resection of the prostate follows the procedures of the Ministry of Health; there is no discrimination or care between the two groups of patients. The researcher was not involved in the designation process, the implementation of PCA.

III. RESULT

Table 1. Some patient characteristics

Characteristics	Group 1 (n = 92)	Group 2 (n = 32)	p
	$\bar{X}$ ± SD		
Age (year)	72.4 ± 7.4	72.4 ± 5.8	0.996(*)
BMI	22.2 ± 2.7	22.3 ± 3.0	0.881(*)
Prostate weight (gram)	64.2 ± 22.7	69.5 ± 24.5	0.291(**)
Catheterization (day)	4.1 ± 1.6	4.0 ± 0.7	0.925(**)

(*): Independent sample t - test. (**): Mann-Whitney test.

There was no statistically significant difference between the 2 groups in terms of age, body mass index (BMI), prostate volume, and postoperative urethral catheterization (p>0.05).

Table 2. VAS score in the first 3 days after surgery

Day	VAS score ($\bar{X}$ ± SD)		p
	Group 1 (n = 92)	Group 2 (n = 32)	
Day 1	0.40 ± 0.65	1.16 ± 1.63	0.008
Day 2	0.08 ± 0.31	0.69 ± 1.78	0.003
Day 3	0.05 ± 0.27	0.28 ± 0.85	0.950

(Mann-Whitney test)

On the first and second days after surgery, the mean VAS scores of group 1 were statistically significantly lower than those of group 2.

Table 3. Pain level in the first 3 days after surgery

Day	Pain level						p
	Group 1 (n = 92)			Group 2 (n = 32)			
	No pain	Mild	Moderate	No pain	Mild	Moderate	
Day 1	63 (68.5%)	29 (31.5%)	0 (0%)	14 (43.8%)	14 (43.8%)	4 (12.5%)	0.001
Day 2	86 (93.5%)	6 (6.5%)	0 (0%)	24 (75.0%)	5 (15.6%)	3 (9.4%)	0.004
Day 3	88 (95.7%)	4 (4.3%)	0 (0%)	28 (87.5%)	3 (9.4%)	1 (3.1%)	0.15

(Fisher's Exact test)

On the first and second days after surgery, group 2 had more pain than group 1, the difference was statistically significant with p=0.001 and 0.004 respectively. On the third day, the pain levels of the 2 groups did not differ with p=0.15.

We recorded nausea/vomiting symptoms occurring on the first postoperative day in both groups 1 and 2 with rates of 2.2% (2 patients) and 6.3% (2 patients), respectively; however, the difference was not statistically significant with p=0.274 (Fisher's Exact test). No other symptoms were recorded on the first day or the following days that were related to postoperative pain relief.

IV. DISCUSSION

Table 1 shows that the two groups of patients were similar in some clinical, subclinical, and postoperative characteristics. The mean age, body mass index, and glandular mass of group 1 and group 2 were 72.4 ± 7.4 years and 72.4 ± 5.8 years, respectively; 22.2 ± 2.7 and 22.3 ± 3.0, 64.2 ± 22.7 grams and 69.5 ± 24.5 grams; the difference was not statistically significant (p>0.05). The mean postoperative urethral catheterization of group 1 was 4.1 ± 1.6 days, of group 2 was 4.0 ± 0.7 days, there was also no difference (p=0.925). These similar characteristics would give the expectation of equivalence in postoperative pain treatment.

Unlike open surgery, pain after TURP is mainly due to catheter-related conditions (CRBD), causing bladder spasms, urge to defecate, penile pain, and lower abdominal pain. The patient is an elderly male, often with multiple comorbidities; postoperative pain not only affects the surgical outcome but also increases the risk of worsening symptoms of co-morbidities. Postoperative pain treatment must be effective in reducing pain and have few side effects. There are many different methods of medical management of post-TURP pain, many different types of drugs are used in addition to the usual injectable pain relievers: Paracetamol, non-steroids, opioids[3].

Some studies have shown that using local bladder anesthetics such as prilocaine[5], bupivacaine[6] in the postoperative bladder irrigation solution has the effect of reducing CRBD and reducing the amount of injectable analgesics. Pudendal nerve block also reduced CRBD within 24 hours after surgery and no adverse effects were noted compared with the control group[7]. Preoperative use of nefopam was effective in reducing postoperative CRBD (45.7% vs. 84.8% in the control group) and did not increase postoperative morphine use[8]. Intravenous injection of Hyoscine N-butyl bromide immediately after surgery is effective in reducing the severity of CRBD, reducing the need for analgesics, and shortening the time in the postoperative recovery room[9].

McNicol (2015) analyzed 49 controlled clinical trials comparing the PCA group (1725 patients) and the conventional opioid group (1684 patients) for postoperative pain relief. The results showed that PCA provided better pain control with lower VAS scores and higher patient satisfaction[10].

In this study, we evaluated the efficacy and compared between 2 groups: Group 1 was treated with PCA for pain relief combined with paracetamol, non-steroidal drugs and group 2 included patients treated with paracetamol, non-steroidal drugs, opioids without PCA.

Table 2 shows that both regimens were effective in reducing pain, with a mean VAS score < 3. Evaluation at day 1 and day 2 showed that pain reduction in group 1 was better than in group 2 with mean VAS scores of 0.04 and 0.08 compared to 1.16 and 0.69, respectively (p=0.008 and p=0.003). However, evaluation at day 3 showed that the difference was not statistically significant (p=0.950).

All patients in group 1 had a VAS score ≤ 3, and no patients were classified as having moderate pain. Group 2 had moderate pain rates on the first, second, and third days after surgery of 12.5%, 9.4%, and 3.1%, respectively. The statistically significant difference between the two groups was only on the first day (p=0.001) and the second day (p=0.004) (Table 3). This was explained by the fact that postoperative pain gradually decreased in the following days, and both groups of patients

recovered after surgery. Our results are consistent with the conclusion of McNicol[10].

We only recorded symptoms of nausea/vomiting on the first postoperative day with the rates in groups 1 and 2 being 2.2% and 6.3%, respectively; this difference was not statistically significant with p=0.274. In McNicol's study, the rate of itching in the PCA group was higher than that in the control group (15% vs. 8% with p=0.01); other side effects had similar rates between the two groups. The author also analyzed that the amount of opioid consumed was higher in the PCA group[10]. This difference is due to the author's synthesis of many studies evaluating many different types of surgery including open surgery, so the average opioid consumption was higher than in this study after endoscopic surgery; it is also possible that the number of patients in our study was limited.

V. CONCLUSION

Multimodal analgesic regimen using patient-controlled analgesia with intravenous fentanyl (PCA) combined with conventional analgesics (paracetamol, non-steroids) has better pain relief effect than regimen using only analgesics (paracetamol, non-steroids, opioids) without PCA. PCA is an effective and safe method in pain relief for patients after transurethral resection of the prostate.

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