

Effects of Thunder-fire Moxibustion on Inflammatory Factors and Quality of Life in Patients after Flexible Ureteroscopy

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Abstract

Objective: To investigate the effect of thunder-fire moxibustion on inflammatory factors and quality of life in patients after flexible ureteroscopy. **Method:** A total of 82 patients with urinary calculi who were admitted from May 2020 to May 2021 were selected as the research subjects, all of whom underwent flexible ureteroscopic surgery. They were divided into control group and observation group with 41 cases in each group by random number table method. Both groups received usual care. The control group was treated with a traditional Chinese medicine hot pack, and the observation group was treated with thunder-fire moxibustion. The levels of inflammatory factors and quality of life were compared between the two groups. **Result:** Compared with the control group, the stone clearance rate, the incidence of hematuria and fever in the observation group were significantly different ($P < 0.05$); There was no significant difference in the levels of $\text{TNF}\alpha$, IL-6, PCT, and CRP between the two groups before intervention ($P > 0.05$); After the intervention, the above indexes in the observation group were significantly lower than those in the control group ($P < 0.05$); There was no significant difference in SF-36 scores between the two groups before intervention ($P > 0.05$), and the intervention and SF-36 scores in the observation group were significantly higher than those in the control group ($P < 0.05$). **Conclusion:** Thunder-fire moxibustion can promote the recovery of patients after flexible ureteroscopy, control the level of inflammatory factors, and improve the quality of life of patients, which is worthy of promotion.

Keywords

Thunder-fire moxibustion; Flexible ureteroscopy; Inflammatory factors; Quality of life.

1. Introduction

Flexible ureteroscopy is a high-tech surgical solution for urology. It has the advantages of a clear operative field, good flexibility, and a thin mirror body, which can easily cause damage to the ureter and is conducive to the removal of stones in various parts. In recent years, it has been widely used in clinical practice [1]. Although flexible ureteroscopy is less traumatic, surgery as a stressor can trigger perioperative stress responses. At the same time, postoperative inflammation and complications cannot be ignored. Therefore, it is very important to give appropriate nursing intervention during the perioperative period [2]. Thunder-fire moxibustion is a traditional Chinese medicine therapy, which takes into account the dual effects of medicine and moxibustion. Studies have shown that it has a certain analgesic effect [3]. In this study, thunder-fire moxibustion was used in 41 patients after flexible ureteroscopy who were admitted from May 2020 to May 2021 to evaluate its effect on inflammatory factors and quality of life.

2. Material and Method

2.1. General Material

A total of 82 patients with urinary calculi who were admitted from May 2020 to May 2021 were selected as the research objects, and they were randomly divided into the control group and the observation group, with 41 cases in each group. The control group consisted of 26 males and 15 females, aged 24 to 67 years, with an average age of (45.56 ± 1.27) years. Disease types: 17 cases of kidney stones and 24 cases of ureteral stones. In the observation group, there were 25 males and 16 females, aged 23-66 years, with an average of (45.42 ± 1.21) years old. Disease types: 19 cases of kidney stones and 22 cases of ureteral stones. There was no significant difference in the data between the two groups ($P > 0.05$).

2.2. Inclusion and Exclusion Criteria

Inclusion criteria: 1) Age > 18 years; 2) Voluntary ureteroscopic surgery and compliance with surgical indications; 3) No abnormality in the results of routine blood and urine tests; 4) Signed informed consent.

Exclusion criteria: 1) Severe strictures of the urethra and ureter; 2) Patients with malignant tumors of the urinary system or acute infection; 3) Those who have a history of pelvic trauma, radiotherapy, and surgery in the past; 4) Those who are allergic to thunder-fire moxibustion or have treatment contraindications; 5) Combining mental illness and mental illness; 6) Poor medical compliance or drop out of the researcher; 7) Those with skin ulceration on the lower back; 8) Postoperative bleeding and fever.

2.3. Method

Both groups received routine nursing care. Health education was conducted before surgery, surgical procedures and precautions were explained, and preoperative preparations were made to assist patients in improving relevant examinations. During the operation, the vital signs were closely monitored, and temperature care was taken. After the operation, the changes in the patient's condition were closely observed, and the catheter was taken care of to avoid knotting and slippage of the catheter. The patient was instructed to drink more water during the recovery period and keep drinking 2000~3000ml of water per day, avoiding high oxalate and high purine diets, keeping the diet light and digestible, and eating more fresh fruits and vegetables. Strenuous exercise was avoided after surgery. Do not lift heavy objects and avoid coughing forcefully to increase abdominal pressure.

The control group used a traditional Chinese medicine hot pack. Recipe: 60g perilla seeds, 60g white mustard seeds, 60g radish seeds, and 30g Evodia, grind them into powder. Add vinegar and ginger juice to blend. Put it into a precision heating box (model XU225) and heat it to 100° . The ureter was applied externally with a woven coat and left for 30 min. The time can be extended on the 1st day, but it should be ≤ 1 h. Twice a day after that, starting on the 1st postoperative day, until discharge.

The observation group received thunder-fire moxibustion. First, moxibustion is performed vertically up and down the bladder meridian of the back. Afterward, small circular arc moxibustion was performed on acupoints such as Shenshu, Ashi, and bladder Shu on the back. Note that the distance between thunder-fire moxibustion and the skin is 1~2cm, and it is advisable for the skin to be red. One time a day, 20~30min each time from the 1st postoperative day until discharge. After the end of thunder-fire moxibustion, the patient was instructed to drink more water.

2.4. Observation Indicator

1) Record the stone clearance rate, hematuria, and fever incidence in the two groups. A urinary CT scan was performed in both groups two weeks after the operation, and the stone clearance

rates of the two groups were compared. Stones with a length ≤ 4 mm were considered as residual fragments, and >4 mm were considered as residual stones. If no stone remains, or there is ≤ 1 residual fragment, it is effectively removed. If there are stone residues or fragments ≥ 2 , it is invalid to remove. Postoperative hematuria was assessed using a hematuria colorimeter. Light pink urine is mild hematuria, meat washing water is moderate, and dark red is severe. 2) Before the intervention and after the intervention (discharge), 3-5 ml of fasting venous blood was drawn from the two groups and centrifuged at 3000 r/min for 10 min. Enzyme-linked immunosorbent assay was used to detect the levels of tumor necrosis factor (TNF- α), interleukin-6 (IL-6), procalcitonin (PCT), and C-reactive protein (CRP) in the two groups. The quality of life rating scale (SF-36) was used to evaluate the two groups. The total score is 100 points, with higher scores indicating better quality of life.

2.5. The Statistical Method

The research analysis software is SPSS22.0, the measurement data are expressed as ($\bar{x} \pm s$), and the t-test is performed. % means count data and is tested by χ^2 . $P < 0.05$ means the difference is statistically significant.

3. Results

3.1. Comparison of Stone Clearance Rate, Hematuria, and Fever Incidence Between Two Groups

Compared with the control group, the stone clearance rate, hematuria, and fever incidence in the observation group were significantly different ($P < 0.05$), as shown in Table 1.

Table 1. Comparison of stone clearance rate, hematuria, and fever incidence [n, (%)]

Group	Stone clearance rate	Hematuria and fever incidence		
		Hematuria	Fever	Incidence
Observation group (n=41)	38 (92.68)	1 (2.44)	1 (2.44)	2 (4.88)
Control group (n=41)	31 ()	4 (9.76)	4 (9.76)	8 (19.51)
χ^2	4.479	-	-	4.100
P	0.034	-	-	0.043

3.2. Comparison of Inflammatory Factor Levels Between Two Groups

There was no significant difference in the levels of TNF- α , IL-6, PCT, and CRP between the two groups before intervention ($P > 0.05$). After the intervention, the above indexes in the observation group were significantly lower than those in the control group ($P < 0.05$), as shown in Table 2.

Table 2. Comparison of inflammatory factor levels between two groups ($\bar{x} \pm s$)

Group	TNF- α (pg/ml)		IL-6 (pg/ml)	
	Before intervention	After intervention	Before intervention	After intervention
Observation group (n=41)	59.76 \pm 5.12	24.91 \pm 2.63*	19.16 \pm 1.98	7.49 \pm 0.76*
Control group (n=41)	59.62 \pm 4.96	37.19 \pm 3.91*	19.25 \pm 2.04	13.49 \pm 1.64*
t	0.126	16.686	0.203	21.255
P	0.900	0.000	0.840	0.000

Note: * means compared with before intervention, $P < 0.05$.

Table 2. Comparison of inflammatory factor levels between two groups ($\bar{x} \pm s$)

Group	PCT (ng/ml)		CRP (mg/L)	
	Before intervention	After intervention	Before intervention	After intervention
Observation group (n=41)	15.13±2.14	7.01±0.82*	25.12±2.45	5.69±0.78*
Control group (n=41)	15.27±2.32	12.79±1.49*	25.26±2.57	14.87±1.91*
t	0.284	21.761	0.252	28.491
P	0.777	0.000	0.801	0.000

Note: * means compared with before intervention, $P < 0.05$.

3.3. Comparison of Quality of Life Scores Between Two Groups

There was no significant difference in SF-36 scores between the two groups before intervention ($P > 0.05$). The intervention and SF-36 scores in the observation group were significantly higher than those in the control group ($P < 0.05$), as shown in Table 3.

Table 3. Comparison of quality of life scores between the two groups ($\bar{x} \pm s$, score)

Group	Before intervention	After intervention
Observation group (n=41)	71.02±2.64	89.53±5.17*
Control group (n=41)	71.25±2.79	78.61±3.76*
t	0.383	10.938
P	0.702	0.000

Note: * means compared with before intervention, $P < 0.05$.

4. Discussion

Flexible ureteroscopy is a common surgical procedure for the clinical treatment of kidney stones, ureteral stones, and other diseases. It has the advantages of a clear surgical field, less trauma, quick postoperative recovery, and high safety, and has been widely used in clinical practice in recent years. During flexible ureteroscopy, renal puncture can be avoided, and it can directly pass through the natural force and enter the renal pelvis, which is conducive to relieving clinical symptoms and promoting rapid recovery of the disease [4]. However, surgery is a stressor, and it is difficult to avoid inflammatory reactions and complications after surgery. Therefore, it is of great significance to cooperate with appropriate nursing intervention during the perioperative period.

As people pay more attention to the disease, it is difficult for routine care to better meet the needs of patients. Thunder-fire moxibustion is derived from "Thunder-Fire Needle". It mainly replaces real moxibustion with open fire hanging moxibustion. It combines syndrome differentiation, meridian theory, modern medicine, etc., and uses the heat energy and medicinal effect of moxibustion strips to transmit through the meridians, so as to regulate the internal organs, warm the meridians, dispel cold and relieve pain to achieve the purpose of treatment [5-6]. The action mechanism of thunder-fire moxibustion mainly includes the following aspects: 1) Physiological point of view: It can expand blood vessels to promote local blood circulation, inhibit vascular permeability, reduce inflammatory exudates, and accelerate inflammatory absorption [7]. 2) Pharmacological effects: The different drugs prepared by thunder-fire

moxibustion can form a high concentration drug area on the local skin, allowing the drug to penetrate into the acupoints, thereby exerting the functions of warming meridians and dredging collaterals, promoting blood circulation and removing blood stasis, removing dampness and relieving pain [8]. 3) Immune mechanism: Studies have shown that thunder-fire moxibustion can regulate the immune function of the body. The reason for the analysis may be that thunder-fire moxibustion can stimulate the hydrogen bonds of biomolecules in acupoints, promote the excitation-related resonance absorption effect, and regulate the energy required by cells through the nerve-humoral system, so as to strengthen the body and eliminate pathogens, warm the meridians, and dispel cold [9]. 4) Neural electrophysiology: Some studies have shown that the high-temperature irradiation produced by thunder-fire moxibustion can stimulate macromolecules on the cell membrane of tissue receptors, which can lead to changes in membrane permeability, resulting in changes in bioelectricity and changes in the concentration of endorphins and 5-HT in the brain. Thus, it can increase the pain threshold of the human body and play an analgesic role [10].

In recent years, the departments of osteoarthritis and internal medicine have successively carried out studies on thunder-fire moxibustion, and many scholars have used it in the treatment of gynecological inflammation and pain. However, there are relatively few studies on the application of thunder-fire moxibustion in urinary system diseases [11]. The author applies thunder-fire moxibustion to patients after flexible ureteroscopy and believes that thunder-fire moxibustion can promote ureteral peristalsis, improve urine circulation, reduce the pressure in the renal pelvis, and promote the effective discharge of stones in the body, thereby relieving the symptoms of colic [12]. The results of this study showed that the stone clearance rate of the observation group was higher than that of the control group, and the incidence of hematuria and fever was lower than that of the control group. It suggests that thunder-fire moxibustion can effectively promote the excretion of stones in the body, reduce postoperative complications, and improve the surgical effect [13]. The reason may be that thunder-fire moxibustion can dilate blood vessels through the heat and infrared radiation generated by the burning of drug powder, thereby promoting local blood circulation, reducing inflammatory exudates, and accelerating inflammatory absorption, that reducing the body's inflammatory response [14]. The quality of life score of the observation group was higher than that of the control group. The analysis may be related to the reasons that thunder-fire moxibustion can improve the body's immunity, promote the expulsion of stones, and relieve colic [15].

In conclusion, thunder-fire moxibustion can promote the recovery of patients after flexible ureteroscopy, control the level of inflammatory factors, and improve the quality of life of patients, which is worthy of promotion.

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