

Clinical study of external application of liuhe dan in the treatment of anal edge edema after mixed hemorrhoid operation

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Abstract: To observe the therapeutic efficacy of external application of Liuhe Dan in the treatment of anal edge edema after mixed hemorrhoid operation. A total of 160 patients who had been treated for lotion anal edge edema from January 2016 to August 2018 were enrolled research objects. They were divided into control group accepting routine nursing methods (80 cases) and research group accepting external application of Liuhe Dan (80 cases). The therapeutic efficacies of two groups were compared. The anal edge edema score and wound pain score of the research group were significantly lower than those of the control group ($p < 0.05$). Meanwhile, the length of hospital stay and wound healing time of the research group were significantly shorter than those of the control group ($p < 0.05$). External application of Liuhe Dan in the treatment of anal edge edema after mixed hemorrhoid operation could significantly improve the therapeutic efficacy and alleviate the patient's pain, which is of great application value.

Keywords: Liuhe Dan, external application, mixed hemorrhoid operation, anal edge edema, therapeutic efficacy.

INTRODUCTION

Anal edge edema refers to edema, congestion or swelling and pain in the skin of anal canal and anal edge, which affects the patient's quality of life to a varied degree. In usual, The edema that results from increased osmotic pressure in the blood vessels and lymphatic reflux disorders is called hyperemia edema (Wu *et al.*, 2012; Caroline and Chinn, 2011; Li and Chen, 2015; Abbasi *et al.*, 2018), while edema resulting from anal canal and anal edge infection is called inflammatory edema. Anal edge edema is a common complication after anorectal surgery. Once edema occurs, the pain of the anus would be aggravated. The reasons of edema include excessive removal or ligation of anal margin tissue during surgery, excessive incisions or unreasonable choice of incisions, etc. When the vascular permeability is increased, part of water will be retained in the interstitial space (Xu *et al.*, 2015; Chen *et al.*, 2017; Liu, Min and Ashraf, 2018).

Mixed hemorrhoid (fig. 1) is a common anorectal disease, of which the main treatment is surgery. Also, Milligan-Morgan surgery is a commonly used approach, which has been consistently recognized at home and abroad. Postoperative anal edge edema is also commonly seen, which requires more attention. This study explores the effectiveness of external application of Liuhe Dan in treatment of patients with anal edge edema after mixed hemorrhoids operation, in order to provide a valuable reference for clinical treatment.

MATERIALS AND METHODS

General design

A total of 160 patients who had been diagnosed as anal edge edema after mixed hemorrhoid operation from January 2016 to August 2018 were enrolled as research objects in West China Hospital. These patients were divided into control group accepting routine nursing methods (80 cases) and research group accepting external application of Liuhe Dan (80 cases). All patients and their family enjoyed the right to know and signed formal consent. This study was approved by the hospital ethic committee (Fahim and Sathi, 2018). There were 35 male patients and 45 female patients in the research group, with an average age of (45.0 ± 0.3) years and an average disease course of (6.9 ± 2.4) years. In contrast, there were 32 male patients and 48 female patients in the control group, with an average age of (46.3 ± 1.5) years and an average disease course of (5.8 ± 3.0) years. There was no significant difference in the general data between two groups ($p > 0.05$) (Fujimori *et al.*, 2017; Mineo Kamiya and Tsukuda, 2017).

Methods

The therapeutic method for the patients in the control group. Routine therapeutic method was applied on the patients in the control group. 100ml of lotion that were used to dry dampness and stop itching was diluted with 1500mL of warm water, and then used for fumigation-washing therapy. The constituents of the lotion include cortex phellodendron, radix sophorae flavescentis, fructus kochiae, pericarpium zanthoxyli, mint, ice plant, hydnocarpus, fructus cnidii, groudseel (Zeeshan, Barqat, and Mahmood, 2018). The water temperature of

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fumigation-washing therapy was controlled at about 43°C, 15min each time, twice a day. Meanwhile, the patient underwent local infrared therapy, 15 minutes each time, once a day. In addition, 50 g of magnesium sulfate powder was dissolved in 100 mL of warm water (40°C) to prepare a 50% magnesium sulfate solution, and then 8 layers of 5cm × 8cm gauze was immersed in the solution. The patient was placed at a comfortable and correct lateral position, the treatment towel was placed under the buttocks, and the anus was covered with a gauze soaked with 50% magnesium sulfate solution. The treatment was performed twice a day (Alvi *et al.*, 2018).

The therapeutic method for the patients in the research group: On the basis of routine treatment for the control group, external application of Liuhe Dan was adopted for patients in the research group. The constituents of Liuhe Dan include raw rhubarb, raw cortex phellodendri, mint, bletilla and radix angelicae. A gauze smeared with Liuhe Dan (with a thickness of about 5mm and a width of 1cm longer than the edge of mass) was placed on the mass, and then fixed with adhesive tape. This treatment was performed twice a day (Abid *et al.*, 2017; Dirikoc *et al.*, 2017; Ge *et al.*, 2017).



Fig. 1: The image of mixed hemorrhoid.

Observational indexes

Relevant therapeutic indexes were observed and compared between the two groups, including the anal edge edema score, pain score of the wound, length of hospital stay and wound healing time. Objective evaluation of anal edge edema score after operation was performed strictly according to the classification criteria proposed by National Anorectal Surgery Conference. The pain score of the wound was assessed with Visual analogue scale (VAS) (Kamatani *et al.*, 2016; Mehvish and Barkat, 2018). The time of wound healing was measured from the first day after operation to the day of

complete wound healing. The length of hospital stay was measured from the first day of admission to the day of discharge (Kierys *et al.*, 2017; Koca *et al.*, 2017; Patel, 2017).

STATISTICAL ANALYSIS

Statistical analysis was performed using SPSS21.0. All quantitative data were expressed in the form of mean ± standard variance ($\bar{x} \pm s$), with t-test for intergroup comparison. Enumeration data were expressed in the form of natural number (n) + percentage (%), with chi-square test for intergroup comparison. $P < 0.05$ represents the intergroup difference was of statistically significance.

RESULTS

Comparison of the pain score of the wound between two groups

As shown in table 1, compared with the control group, the pain score of the wound was significantly lower in the research group during all time ($p < 0.05$).

Comparison of the anal edge edema score between two groups

As shown in table 2, compared with the control group, the anal edge edema score was significantly lower in the research group after medication ($p < 0.05$). The images of patient before and after medication are shown in fig. 2 and fig. 3, respectively.

Comparison of the wound healing time and the length of hospital stay between two groups

As shown in table 3, the wound healing time and the length of hospital stay in the control group were significantly longer than those in the research group ($p < 0.05$).

DISCUSSION

Anal edge edema is a relatively common complication after mixed hemorrhoids operation. The symptoms include postoperative anal pain, itching, discomfort, fear for defecation and so on. It may also prolong the time of wound healing and even increase the chance of wound infection, reducing the effectiveness of surgery (Wang, 2018; Xiong Zhang and Chen, 2016; Zeeshan, Barkat and Mahmood, 2018). From the perspective of Traditional Chinese medicine, the anal edge edema after mixed hemorrhoids operation is mainly due to that during operation, the patient is injured by the blade, the tendons are cut and the blood and channels are blocked, which makes damp-heat move downward, leading to local blockade of channels and edema. Therefore, Chinese medicine treatment of anal edema aims to clear away the heat and dampness as well as to activate blood circulation and reduce swelling.



Fig. 2 The image before medication



Fig. 3: The image after medication

Table 1: Comparison of the pain score of the wound between two groups ($x \pm s$)

Group	Before medication	Medication for 2 days	Medication for 7 days
Research group (n = 80)	4.09 ± 1.20	1.69 ± 0.88	1.21 ± 0.36
Control group (n = 80)	4.13 ± 1.35	2.36 ± 0.90	1.86 ± 0.59
t	0.33	4.82	6.94
p	0.198	0.016	0.29

Table 2: Comparison of the anal edge edema score between two groups ($x \pm s$)

Group	Before medication	Medication for 2 days	Medication for 7 days
Research group (n = 80)	4.27 ± 1.50	2.37 ± 0.92	1.06 ± 0.57
Control group (n = 80)	4.62 ± 1.40	3.39 ± 0.78	1.98 ± 0.41
t	0.80	6.35	8.17
p	0.836	0.026	0.010

Table 3: Comparison of the wound healing time and the length of hospital stay between two groups ($x \pm s$)

Group	Cases	Time of wound healing(d)	Length of hospital stay (d)
Research group	80	7.28 ± 0.36	18.90 ± 5.23
Control group	80	9.65 ± 0.56	23.05 ± 6.70
t		8.92	11.95
P		0.033	0.016

In this study, external application of Liuhe Dan has gain relatively ideal effects. Chemical constituents of Liuhe Dan rhubarb and cortex phellodendri have the effects of prugating heat and bowels, removing pathogenic heat and toxic materials, as well as dispelling stasis and relieving pain. The Bletilla has the effects of detumescence, promoting granulation and healing up sore. Mint can exert the effect of dredging collaterals, activating blood circulation, dispelling swelling and diathermy. External application of mint is favorable to stop itching, diminish inflammation and ease pain, alleviate the feeling of swelling as well as promote blood circulation. This prescription was made into paste with honey for external application.

The prescription of Liuhe Dan has scientific and rigorous principles. Through combined application of the drugs contained in Liuhe Dan, it is able to clear away heat and toxic materials, relive swelling and pain as well as dispel stasis and dampness. In addition, this prescription is soft and sticky, not easy to dry, easy to be fixed in the affected part, so that the affected part is not moist, pores always sweat, which is conducive to the entry of drug gas and the release of sores. On this basis, the effect of Liuhe Dan can be ensured, enhancing blood circulation and heat dissipation (Shin *et al.*, 2017; Ikuo *et al.*, 2017).

The external application of Liuhe Dan has significant effects in treating anal edge edema after mixed

hemorrhoid operation. This method can not only relieve pain and edema quickly, but also promote wound healing, reduce the length of hospital stay, promote the recovery of patients as soon as possible and obtain a higher quality of life. External application of Liuhe Dan fully presents the principle of "any external application of medicine requires sweat in the pore" proposed by The Golden mirror of medicine. This is due to that "if the blood flow is well circulated, the heat will dissipate and there will be sweat. In contrast, if the blood flow is not well circulated, there is usually no heat to dissipate, so there is no sweat". The prescription of Liuhe Dan has scientific and rigorous principles. Through combined application of the drugs contained in Liuhe Dan, it is able to clear away heat and toxic materials, relive swelling and pain as well as dispel stasis and dampness. The results of this study showed that the anal edema score and wound pain score in the research group were significantly lower than those in the control group after treatment. Moreover, the length of hospital stay and wound healing time were significantly shorter in the research group compared with those in the control group. These results are consistent with relevant studies.

CONCLUSION

External application of Liuhe Dan has significant effects in treating anal edge edema after mixed hemorrhoid operation. This method can not only relieve pain and edema quickly, but also promote wound healing, reduce the length of hospital stay, promote the recovery of patients as soon as possible and obtain a higher quality of life, which is worth promoting.

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