Observation on Therapeutic Efficacy of External Application of Mirabilite for Periappendiceal Abscess with Heat-Toxin Injuring Yin Pattern and Nursing Care

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Abstract

Objective To investigate the clinical efficacy of external application of mirabilite in treating periappendiceal abscess with heat-toxin injuring yin pattern. Methods A total of 60 hospitalized patients diagnosed with periappendiceal abscess of heat-toxin injuring yin pattern in our department were enrolled and randomly divided into treatment group and control group. The control group received conventional antibiotic therapy for 1-2 weeks, while the treatment group received external application of mirabilite in addition to the conventional antibiotic therapy. The total effective rate, time to normalization of body temperature, time to relief of abdominal pain, time to abscess reduction, time to normalization of white blood cell count, hospitalization duration, and patient satisfaction were compared between the two groups. Results The total effective rate of the treatment group was 93.33%, significantly higher than that of the control group (73.33%), and the difference in efficacy was statistically significant ($P<0.05$). Comparisons between the two groups in terms of total effective rate, time to normalization of body temperature, time to relief of abdominal pain, time to abscess reduction, time to normalization of white blood cell count, hospitalization duration, and patient satisfaction showed that the treatment group was superior to the control group in all aspects ($P<0.05$). Conclusion External application of mirabilite for periappendiceal abscess with heat-toxin injuring yin pattern can enhance therapeutic efficacy, reduce patient discomfort, shorten hospitalization duration, improve patient satisfaction with nursing care, and features a simple and safe operation method, thus being worthy of wide clinical promotion and application.

Full Text

Observation on the Curative Effect and Nursing Care of Mirabilite External Application in Treating Periappendiceal Abscess with Heat-Toxin Damaging Yin Syndrome

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Abstract

Objective: To investigate the clinical efficacy of mirabilite external application in treating periappendiceal abscess with heat-toxin damaging yin syndrome. **Methods:** Sixty hospitalized patients diagnosed with periappendiceal abscess of heat-toxin damaging yin syndrome were randomly divided into a treatment group and a control group. The control group received conventional antibiotic therapy for 1–2 weeks, while the treatment group received mirabilite external application in addition to the control group's regimen. The total effective rate, time to normalization of body temperature, time to abdominal pain relief, time to abscess reduction, time to normalization of white blood cell count, length of hospital stay, and patient satisfaction were compared between the two groups. **Results:** The total effective rate in the treatment group was 93.33%, significantly higher than the 73.33% in the control group, with a statistically significant difference in therapeutic effect ($P<0.05$). Comparisons of total effective rate, time to temperature normalization, time to pain relief, time to abscess reduction, time to white blood cell count normalization, hospitalization duration, and patient satisfaction all favored the treatment group ($P<0.05$). **Conclusion:** Mirabilite external application for periappendiceal abscess with heat-toxin damaging yin syndrome can enhance therapeutic efficacy, alleviate patient suffering, shorten hospitalization time, and improve patient satisfaction with nursing care. The method is simple, safe, and worthy of widespread clinical application.

Keywords: external application of mirabilite; heat-toxin damaging yin syndrome; periappendiceal abscess; nursing care

Periappendiceal abscess falls under the category of "intestinal abscess" (肠痈) in Traditional Chinese Medicine (TCM). According to TCM theory, intestinal abscess primarily results from improper diet, exposure to cold or warmth, or emotional injury, which damages the intestines and stomach, leading to impaired intestinal transmission, stagnation of waste, qi stagnation and blood stasis, transformation of stasis into heat, and ultimately abscess formation due to excessive heat damaging the tissues. Clinically common patterns include damp-heat accumulation syndrome, qi-blood stasis syndrome, and heat-toxin damaging yin syndrome. Current clinical management of periappendiceal abscess remains primarily conservative. Through years of clinical practice in our hospital's general surgery department, we have observed significant therapeutic effects when combining anti-infective treatment with mirabilite external application and specialized nursing care. This method is simple, safe, and we now

report our findings as follows.

1.1 General Data

We selected 60 patients hospitalized between January 2021 and November 2023 who were diagnosed with periappendiceal abscess of heat-toxin damaging yin syndrome. Using a random number table method, patients were divided into a treatment group and a control group, with 30 cases in each group. The treatment group comprised 18 males and 12 females, aged 18–72 years with a mean age of 37.12$\pm$2.27*years.Diseasedurationrangedfrom*3–6*dayswithanaverageof*3.85$\pm$1.63*days.Ultrasoundexa* cm). Comparisons between the two groups in terms of age, gender, disease course, medication status, and initial ultrasound-measured abscess size (long diameter $\times$ short diameter) showed no statistically significant differences ($P>0.05$), indicating comparability.

1.2 Inclusion Criteria

Patients were included if they met the following criteria: (1) satisfied diagnostic criteria for periappendiceal abscess with migratory right lower abdominal pain, fever, and elevated white blood cell count; (2) had ultrasound or abdominal CT findings consistent with periappendiceal abscess diagnosis; (3) showed no significant cardiopulmonary dysfunction; (4) had no drug allergy history and intact skin; and (5) were conscious, treatment-compliant, and without psychiatric disorders.

1.3 Exclusion Criteria

Exclusion criteria included: (1) concurrent other digestive system diseases such as gastrointestinal bleeding or perforation; (2) history of drug allergy or skin ulceration; (3) pregnancy or concurrent cardiac, hepatic, or renal dysfunction or organic damage; (4) immunologic or hematologic system diseases; and (5) failure to respond to conservative treatment requiring urgent surgical intervention.

1.4 Treatment Protocols

1.4.1 Control Group The control group received conventional anti-infective therapy consisting of cefoperazone sodium and sulbactam sodium 1.5 g (National Drug Approval Number H20066402) plus metronidazole and sodium chloride 0.5 g (National Drug Approval Number H20066908) administered intravenously twice daily. Combined medication and symptomatic supportive treatment were provided, with 7 days constituting one course and a total of 2 courses administered.

1.4.2 Treatment Group The treatment group received mirabilite external application in addition to the control group's regimen. The specific procedure was as follows: 300 g of mirabilite and 100 g of cold rice (2–8°C) were thoroughly mixed and placed in a 15$\times$20 cm cloth bag. The medicine bag was spread

evenly and applied to the McBurney's point in the right lower abdomen. A non-woven therapeutic towel was placed over the bag, with towels wrapped around the periphery to prevent moisture from wetting clothing. Finally, an abdominal binder secured the application. The bag was flipped top-to-bottom every 4–6 hours and replaced daily, with continuous application until patient discharge.

1.5 Nursing Care

1.5.1 Condition Assessment and Monitoring Points Nurses observed the location, nature, and severity of abdominal pain, presence of masses, fever, vomiting, and bowel irregularities. Temperature changes and defecation status were recorded daily.

1.5.2 Daily Living Care Patients rested in a quiet, comfortable ward in absolute bed rest, positioned in semi-reclining or right lateral decubitus to allow inflammatory exudate to localize in the pelvic cavity by gravity, thereby preventing further spread of infection and preventing interintestinal or subphrenic abscess formation. Sweat-soaked clothing and bedding were promptly changed during high fever to prevent chilling. Diet progressed from fasting or liquid diet to semi-liquid diet and then to regular diet according to condition, with attention to nutritional intake. Spicy, cold, raw, and indigestible foods were prohibited, and smoking and alcohol were forbidden.

1.5.3 Psychological Nursing Nurses actively communicated with patients, promptly monitored emotional changes, and patiently explained the purpose and necessity of various examinations. Disease-related knowledge and precautions requiring family cooperation were explained in accessible language. Recovery cases of similar patients were introduced to provide reassurance. All procedures were performed with proficiency, gentleness, and accuracy to minimize patient suffering, thereby reducing fear and anxiety and promoting better treatment compliance.

1.5.4 External Application Nursing A detailed history of past medical conditions, allergies, psychiatric disorders, and sensory deficits or disturbances was obtained. Cold therapy tolerance and psychological status were assessed, and patients were informed about the procedure, its purpose, and precautions to ensure better cooperation. External application was contraindicated if skin inflammation or ulceration was present. Patients were instructed to empty their bladder and bowels before the procedure and assisted into a supine position. When changing positions, nurses observed whether the medicine bag had shifted. During treatment, local skin for allergic reactions was monitored; if local skin itching, redness, or discomfort occurred, the external application was immediately discontinued and appropriate management initiated.

1.6 Observation Indicators

Clinical efficacy, time to normalization of body temperature, time to abdominal pain relief, time to abscess reduction, time to normalization of white blood cell count, length of hospital stay, and patient satisfaction with nursing care were observed in both groups.

1.7 Efficacy Evaluation Criteria

Evaluation was conducted according to the *Diagnostic and Efficacy Criteria for TCM Diseases and Syndromes* issued by the State Administration of Traditional Chinese Medicine. Cure: body temperature returned to normal, abdominal pain and local tenderness disappeared, no mass palpable on abdominal examination, and ultrasound indicated essentially complete resolution of the right lower abdominal mass. Markedly effective: temperature normalized, abdominal pain and local tenderness disappeared or were minimal, and abdominal palpation and ultrasound indicated the right lower abdominal mass had reduced by more than 2/3. Effective: temperature decreased compared with before, abdominal pain and tenderness were alleviated, and abdominal palpation and ultrasound indicated the right lower abdominal mass had reduced by approximately 1/3. Ineffective: temperature remained decreased, abdominal pain and local tenderness showed minimal improvement or worsened, and abdominal palpation and ultrasound indicated no reduction or enlargement of the right lower abdominal mass; or severe complications requiring emergency surgical intervention occurred. Total effective rate = (cured + markedly effective + effective) / total number of cases × 100%.

1.8 Statistical Methods

All data obtained in this study were analyzed using SPSS 20.0 statistical software. Count data were expressed as rates (%) and analyzed using the ^{2} test; measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$) and analyzed using the t-test. $P<0.05$ was considered statistically significant.

2.1 Comparison of Clinical Efficacy

The clinical efficacy in the treatment group was significantly higher than in the control group ($P<0.05$), showing a significant difference. See Table 1 .

2.2 Comparison of Recovery Indicators

Comparisons of time to temperature normalization, time to pain relief, time to abscess reduction, time to white blood cell count normalization, and length of hospital stay all showed the treatment group was significantly superior to the control group, with statistically significant differences ($P<0.05$). See Table 2 .

2.3 Comparison of Nursing Satisfaction

Patient satisfaction with nursing care in the treatment group was significantly better than in the control group, with a statistically significant difference ($P<0.05$). See Table 3 .

Periappendiceal abscess represents one of the clinical pathological types of acute appendicitis and is a common surgical condition. It occurs when acute appendiceal suppuration, gangrene, or perforation progresses slowly, allowing the omentum to migrate to the right lower abdomen, encapsulating and adhering to the appendix to form an inflammatory mass or periappendiceal abscess. Clinical symptoms and signs mainly include abdominal pain, nausea, vomiting, fever, peritoneal irritation signs, and right lower abdominal mass. In severe cases, systemic infection and toxic symptoms, paralytic ileus, and other manifestations may accompany the condition.

Western medicine treats periappendiceal abscess with either surgical or conservative therapy. However, due to significant local tissue adhesion and edema, surgical removal of the appendix is difficult and may lead to complications such as infection spread and intestinal perforation. Therefore, conservative treatment is currently the primary clinical approach, with appendectomy recommended 3 months after symptom resolution. Conservative treatment includes antibiotic therapy and TCM interventions, with early, adequate, and full-course antibiotic therapy being crucial. Since the main pathogens in acute appendicitis are various Gram-negative bacilli and anaerobic bacteria in the intestine, quinolone antibiotics and third-generation cephalosporins are typically used in combination. After anti-infective treatment, most patients with periappendiceal abscess experience disease resolution or recovery, with abscess reduction or disappearance, though this approach has drawbacks including long treatment cycles and high costs, with a tendency for recurrence. A minority of patients experience disease progression with complications such as pylephlebitis, diffuse peritonitis, or intestinal obstruction, requiring surgical intervention when conservative treatment fails.

As a traditional Chinese medical system, TCM has numerous empirical formulas for treating periappendiceal abscess, primarily focusing on clearing heat and detoxifying, reducing swelling and expelling pus, supplemented by regulating qi and unblocking the bowels, and activating blood to resolve stasis. In addition to oral Chinese medicine, periappendiceal abscess can be treated with external application methods and herbal enemas. Among these, external application of Chinese medicine is most widely used, achieving effects of clearing heat and detoxifying, activating blood to resolve stasis, and reducing swelling to relieve pain. Therefore, mirabilite external application can be employed. Mirabilite belongs to the sulfate mineral class, with salty and bitter taste and cold nature. It enters the stomach and large intestine meridians, belongs to the purgative medicinal category, and has effects of softening hardness and reducing swelling, purging heat and unblocking the bowels, and nourishing yin

to drain fire. Clinically, it is commonly used to treat excess heat accumulation, abdominal distension and pain, dry and bound stools, and intestinal abscess swelling and pain. Mirabilite has broad clinical applications, and studies have shown it has good therapeutic effects on various diseases such as mastitis, acute pancreatitis, and periappendiceal abscess. Wang Lili's research demonstrated that mirabilite external application combined with antibiotic therapy can effectively reduce pain and mass formation in patients with acute mastitis, with significant clinical effects. Li Binjie et al. confirmed that on the basis of conventional Western medicine, Danggui Shaoyao Decoction combined with abdominal mirabilite external application assists in treating mild to moderate acute pancreatitis. Jin Yuan et al. showed that mirabilite external application combined with antibiotic therapy has better clinical efficacy than anti-infective treatment alone, significantly improving treatment effectiveness, reducing complication rates, shortening hospitalization time, and saving costs in patients with periappendiceal abscess. Additionally, mirabilite external application has demonstrated good effects in treating pediatric periappendiceal abscess. Bao Jingfeng et al. found that antibiotics combined with mirabilite external application can significantly reduce WBC and CRP levels and accelerate abscess absorption, thereby controlling disease progression and effectively alleviating clinical symptoms. The medium used is cold rice, suitable for general constitution. Cold rice at 2–8°C is thoroughly mixed with mirabilite, placed in a cloth bag, spread evenly, and applied to the affected area to provide cold therapy. Cold therapy has analgesic, anti-swelling, and exudate-reducing effects, promotes metabolism, reduces bleeding, significantly alleviates inflammatory responses, slows nerve transmission, reduces muscle tension, prevents muscle spasms, and increases pain threshold to reduce suffering.

In summary, mirabilite external application for periappendiceal abscess with heat-toxin damaging yin syndrome is a safe, effective, and economical therapeutic approach that enhances efficacy, alleviates patient suffering, shortens hospitalization time, and improves patient satisfaction with nursing care. The method is simple and safe, warranting widespread clinical application.

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Note: Figure translations are in progress. See original paper for figures.