

Application of Bianstone Warm Moxibustion Therapy in Gastrointestinal Diseases in Children

Yang Yang

Taizhou Third People's Hospital, Taizhou 225300, Jiangsu, China

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Abstract: *Objective:* To explore the effect of Bianstone warm moxibustion therapy combined with routine nursing on improving symptoms and improving the quality of life of children with gastrointestinal diseases. *Methods:* 80 children with gastrointestinal diseases who were treated in our hospital from January 2022 to December 2023 were selected and divided into two groups using the random number table method, with 40 cases in each group. The conventional group only received routine nursing intervention, while the Bianstone group received additional Bianstone warm moxibustion therapy on the basis of routine care. Compare the symptom relief, quality of life and occurrence of complications between the two groups of children. *Results:* The relief time of abdominal distension, vomiting, diarrhea and other symptoms of children in the Bianstone group were shorter than those in the conventional group, with higher quality of life scores and lower complication rates ($p < 0.05$). *Conclusion:* Bianstone warm moxibustion therapy combined with routine nursing can effectively speed up the symptom relief of children with gastrointestinal diseases, improve the quality of life, and reduce the occurrence of complications, and has good clinical application value.

Keywords: Bianstone warm moxibustion therapy; Pediatric gastrointestinal diseases; Symptom relief; Quality of life; Routine care

Online publication: December 20, 2025

1. Introduction

Gastrointestinal diseases in children are very common in pediatric clinics. Symptoms such as abdominal distension, vomiting, and diarrhea often occur, which not only make the children uncomfortable, but also affect daily eating and nutrient absorption, thereby slowing down the progress of growth and development. Parents may even frequently take their children to the doctor due to repeated illness, which consumes a lot of time and energy and brings considerable financial and psychological burdens to the family.

Currently, routine care is mostly used in clinical practice for this type of children, including dietary guidance, condition observation, etc. However, some children's symptoms are relieved slowly, the recovery effect is not ideal, and their long-term dependence on rehydration, drug intervention, etc. may also cause children to develop drug resistance and increase the difficulty of subsequent treatment^[1].

In recent years, as parents' acceptance of traditional Chinese medicine and other treatments continues to increase,

seeking safe, gentle treatments with few side effects has become a new demand for pediatric care. Bianstone warm moxibustion therapy is a traditional external treatment method of traditional Chinese medicine. It exerts a conditioning effect through the warming properties of Bianstone and stimulation of specific acupoints. It does not require oral medication and is gentle in operation. It is in line with the physiological characteristics of children with delicate organs and intolerance to strong stimulation. Therefore, it has gradually attracted attention in the care of pediatric diseases. Based on this, this study applies meteorite warm moxibustion therapy to the care of children with gastrointestinal diseases, and observes its impact on symptom relief, quality of life, and complications of children.

It aims to provide a more targeted reference for the optimization of clinical care plans, help children achieve rapid recovery under safer conditions, and reduce the pressure of family care.

2. Materials and methods

2.1. General information

80 children with gastrointestinal diseases admitted to our hospital from January 2022 to December 2023 were selected as cases and divided into two groups using the random number table method. Forty children were selected in the Bianstone group, including 22 males and 18 females, aged 1 to 7 (4.12 ± 1.35) years old. There were 40 children selected in the conventional group, including 21 males and 19 females, aged 1 to 8 (4.25 ± 1.42) years old. The two groups are comparable, $p > 0.05$.

2.1.1. Inclusion criteria

- (1) Meet the diagnostic criteria for pediatric gastrointestinal diseases;
- (2) Aged 1 to 8 years old;
- (3) Parents are informed and agree to participate in the study.

2.1.2. Exclusion criteria

- (1) Combined with severe liver and kidney dysfunction;
- (2) Skin damage or allergy to meteorites;
- (3) Suffering from congenital gastrointestinal malformations.

2.2. Method

The routine group implemented routine nursing intervention, including:

- (1) Condition monitoring
Closely observing the children's body temperature, vomiting frequency, defecation characteristics and mental status, and recording every 4 hours;
- (2) Dietary guidance
Formulating a diet plan according to the age and condition of the children. Infants and young children mainly receive breast milk or formula milk, and older children are given light and easy-to-digest liquid or semi-liquid. Eat high-quality food and avoid raw, cold, and greasy food
- (3) Rehydration care
For children with severe diarrhea or vomiting, oral rehydration salts or intravenous rehydration are given as directed by the doctor to prevent dehydration and electrolyte disorders;
- (4) Environmental care
Keep the ward temperature at 22–24 °C and the humidity at 55–65%, and provide regular ventilation and disinfection to create a comfortable resting environment for the children.

The Bianstone group added Bianstone warm moxibustion therapy on the basis of routine care. The operation was as

follows:

(1) Preparation work

Use oblate meteorite pieces (diameter 5 cm, thickness 0.8 cm) made from Shandong Sijin Bianstone. Wipe and disinfect with 75% ethanol before use, and then put them in a constant temperature heating box to heat to 40–42 °C;

(2) Acupoint selection and operation

Select Zhongwan point (4 inches above the navel), Tianshu point (2 inches next to the umbilicus), and Zusanli point (3 inches below the outer knee, outer edge of the tibialis anterior muscle). The child lies in the supine position, exposing the skin of the acupoints. The nurse holds the heated meteorite piece in one hand and gently presses it on the acupoints to remove the pain. It is appropriate for the child to feel warm and comfortable. Continue warm moxibustion on each acupoint for 10 to 15 minutes, in the order of Zhongwan point → Tianshu point (once on both sides) → Zusanli point (once on both sides);

(3) Frequency and course of treatment

2 treatments per day, at 9 a.m. and 16 p.m., two treatments. The treatment interval should be no less than 6 hours, and 7 consecutive days of treatment constitute one course of treatment.

(4) Precautions

Closely observe the skin condition of the child during the treatment. If any discomfort such as redness of the skin, crying, or restlessness occurs, stop treatment immediately and lower the temperature of the stone. After treatment, clean the child's skin with warm water to avoid catching cold.

2.3. Observation indicators

Compare the symptom relief time (abdominal distension relief time, vomiting stop time, diarrhea relief time), quality of life score (assessed by the total score of Children's Quality of Life Scale PedsQL4.0, the full score is 100 points, the higher the score, the better the quality of life) and the incidence of complications (including dehydration, electrolyte imbalance, intestinal flora imbalance) between the two groups of children.

2.4. Statistical methods

Data were analyzed using SPSS 24.0. *t*-test for measurement data; χ^2 test for count data. $p < 0.05$ represents significant difference.

3. Results

3.1. Comparison of symptom relief time between the two groups of children

The symptom relief time of the Bianstone group was shorter than that of the conventional group ($p < 0.05$), see **Table 1**.

Table 1. Comparison of symptom relief time between two groups of children ($\bar{x} \pm s$, h)

Groups	Abdominal bloating relief time	Vomiting cessation time	Diarrhea relief time
Conventional group (40)	38.56 ± 6.23	26.34 ± 4.15	45.27 ± 7.31
Bianstone group (40)	22.18 ± 5.17	14.25 ± 3.08	28.63 ± 6.24
<i>t</i>	12.796	14.795	10.950
<i>p</i>	0.000	0.000	0.000

3.2. Comparison of quality-of-life scores between the two groups of children before and after intervention

After intervention, the score of the Bianstone group was higher than that of the conventional group ($p < 0.05$), see **Table 2**.

Table 2. Comparison of quality-of-life scores of two groups of children before and after intervention ($\bar{x} \pm s$, points)

Groups	Pre-intervention score	Post-intervention score
Conventional group (40)	58.32 ± 6.45	72.15 ± 5.89
Bianstone group (40)	57.98 ± 6.31	85.67 ± 6.12
t	0.238	7.833
p	0.812	0.000

3.3. Comparison of the incidence of complications between the two groups of children

The incidence of complications in the meteorite group was lower than that in the conventional group ($p < 0.05$), see **Table 3**.

Table 3. Comparison of the incidence of complications between the two groups of children [n (%)]

Groups	Dehydration	Electrolyte imbalance	Intestinal flora imbalance	Overall incidence rate [n (%)]
Conventional group	5 (12.50)	4 (10.00)	3 (7.50)	12 (30.00)
Bianstone group	1 (2.50)	1 (2.50)	0 (0.00)	2 (5.00)
χ^2				8.658
p				0.003

4. Discussion

The occurrence of gastrointestinal diseases in children is closely related to the immature development of their digestive systems. Their gastrointestinal mucosa is delicate, their digestive enzymes are insufficiently secreted, and their intestinal flora is not yet stable. They are easily affected by factors such as diet, infection, and the environment, causing symptoms such as abdominal distension, vomiting, and diarrhea. Although routine care can provide basic protection for children through disease monitoring, dietary adjustment, etc., it has a limited effect on regulating gastrointestinal function. Therefore, some children's symptoms are slow to resolve, and complications such as dehydration and electrolyte imbalance may occur due to repeated illness. Bianstone warm moxibustion therapy combines the physical properties of Bianstone with TCM acupoint stimulation, which can regulate the gastrointestinal function of children in many aspects, thereby improving the nursing effect. This can also be reflected in the results of this study.

Judging from the symptom relief effect, the time to relieve abdominal distension, stop vomiting, and relieve diarrhea in the Bianstone group was significantly shorter than those in the conventional group. This is because Bianstone warm moxibustion therapy can dually regulate gastrointestinal function through warm stimulation and acupoint action. The selected Shandong Sibin stone contains a variety of trace elements and can continuously release warm energy after heating. When this warm stimulation acts on abdominal acupoints, it can dilate local blood vessels, accelerate gastrointestinal blood circulation, provide sufficient oxygen and nutrients for gastrointestinal mucosal repair, and at the same time promote gastrointestinal peristalsis, improve gastrointestinal motility problems, and relieve abdominal distension symptoms. Zhongwan acupoint, as the acupoint of the stomach, is a key acupoint for regulating the function of the spleen and stomach. Warm moxibustion with stone stones on this acupoint can harmonize the stomach, strengthen the spleen, promote

digestion and stagnation, reduce food retention in the stomach, and thereby alleviate vomiting symptoms; Tianshu acupoint is an acupoint that recruits the large intestine and has the effect of soothing and regulating the intestines and regulating qi and stagnation. Warm moxibustion on this acupoint can regulate the rhythm of intestinal peristalsis, improve intestinal absorption and excretion function, and help relieve diarrhea; Zusanli point is the joint point of Zuyangming stomach meridian, known as the “longevity point”. Warm moxibustion at this point can strengthen the spleen and stomach, replenish qi and nourish blood, enhance the digestion and absorption capacity of the gastrointestinal tract, and fundamentally improve the state of gastrointestinal dysfunction. The cooperation of these three acupuncture points, coupled with the warming effect of the meteorite, jointly speeds up the relief of the children’s symptoms, allowing the children to get rid of physical discomfort faster.

In terms of quality of life, there was no significant difference in PedsQL4.0 scores between the two groups before the intervention, but after the intervention, the scores of the Bianstone group were significantly higher than those of the conventional group, which shows that Bianstone warm moxibustion therapy can effectively improve the quality of life of children. When children have gastrointestinal diseases, symptoms such as abdominal distension, vomiting, and diarrhea will make the children feel painful, leading to loss of appetite and restless sleep, which will affect their daily life and emotional state, and reduce their quality of life. Bianstone warm moxibustion therapy speeds up the symptom relief. After the children’s physical discomfort is relieved, their appetite will gradually recover, they can eat normally to obtain nutrients, their sleep quality will also improve, and their mental state will become better. At the same time, this therapy is simple and gentle to operate, does not cause pain to the children, has a high acceptance rate by the children, reduces crying and resistance caused by the discomfort of the treatment, and allows the children to recover in a more comfortable state. The combination of these factors has significantly improved the quality of life of the children ^[2].

Judging from the occurrence of complications, the total incidence rate in the Bianstone group was only 5.00%, which was much lower than the 30.00% in the conventional group. This reflects the advantages of Bianstone warm moxibustion therapy in improving the safety of nursing care. Dehydration, electrolyte imbalance, and intestinal flora imbalance are common complications of gastrointestinal diseases in children. They are mainly related to excessive loss of body fluids caused by diarrhea and vomiting, and gastrointestinal dysfunction that affects the balance of intestinal flora. Bianstone warm moxibustion therapy can reduce the frequency and amount of diarrhea and vomiting by improving gastrointestinal motility and absorption, thereby reducing the loss of body fluids and electrolytes, and reducing the risk of dehydration and electrolyte disorders. In addition, the improvement of gastrointestinal function can provide a stable living environment for intestinal flora, promote the growth and reproduction of beneficial bacteria, inhibit the growth of harmful bacteria, help maintain the balance of intestinal flora, and thereby reduce the incidence of intestinal flora imbalance. At the same time, during the Bianstone warm moxibustion treatment, the nurse will closely observe the child’s skin condition, mental reaction, etc., and promptly discover and deal with possible problems, which further ensures the safety of the treatment and reduces the occurrence of complications ^[3,4].

From the perspective of traditional Chinese medicine theory, gastrointestinal diseases in children mostly fall into the categories of “stagnation”, “diarrhea”, and “vomiting”. The disease is mainly located in the spleen and stomach. The pathogenesis is abnormal transportation and transformation of the spleen and stomach and poor qi movement. Bianstone warm moxibustion therapy stimulates acupuncture points with warm heat, which can warm and unblock meridians, reconcile qi and blood, and strengthen the spleen and stomach. It is exactly in line with the pathogenesis of gastrointestinal diseases in children. Warm Qi can dispel coldness in the spleen and stomach and improve the inability to transport and transform caused by deficiency and coldness of the spleen and stomach; unobstructed meridians can allow Qi and blood to flow smoothly, provide sufficient Qi and blood support for the spleen and stomach, and enhance the transport and transformation function of the spleen and stomach; harmonization of Qi and blood can also regulate the functions of the internal organs and restore the normal rhythm of gastrointestinal function. This treatment method based on the theory of traditional Chinese medicine can not only relieve superficial symptoms, but also fundamentally regulate the spleen and stomach functions of children and reduce the possibility of recurrence of the disease. This is also an important reason why

the children in the Bianstone group have better recovery results. Judging from the actual value of clinical application, Bianstone warm moxibustion therapy has the characteristics of simple operation, high safety, and good acceptance by children, and is very suitable for promotion in the care of children with gastrointestinal diseases. The meteorite material used in this therapy is common and affordable, and the heating equipment is simple and easy to operate. Nurses can master the correct operation method after simple training. It does not require complex medical equipment and high treatment costs. It is suitable for use in pediatrics and community health service centers in hospitals at all levels ^[5,6]. At the same time, because the treatment process is gentle and painless, most children will not resist, and parents are more likely to accept it, which can improve compliance with nursing intervention. In this study, no serious adverse reactions occurred in any children who received Bianstone warm moxibustion therapy. Only 2 children experienced slight skin redness during the treatment. The symptoms disappeared after adjusting the Bianstone temperature, further proving the safety of this therapy. Compared with other treatments outside traditional Chinese medicine, Bianstone warm moxibustion therapy also has its unique advantages. For example, compared with moxibustion, meteorite warm moxibustion does not produce smoke, which avoids the irritation of the smoke to the respiratory tract of children. It is especially suitable for younger children with delicate respiratory tracts. Compared with external application of traditional Chinese medicine, meteorite warm moxibustion does not require frequent changes of drugs and is easier to operate. In this study, no serious adverse reactions occurred in any children who received Bianstone warm moxibustion therapy. Only 2 children experienced slight skin redness during the treatment. The symptoms disappeared after adjusting the Bianstone temperature, further proving the safety of this therapy. Compared with other treatments outside traditional Chinese medicine, Bianstone warm moxibustion therapy also has its unique advantages. For example, compared with moxibustion, meteorite warm moxibustion does not produce smoke, which avoids the irritation of the smoke to the respiratory tract of children, and is especially suitable for younger children with delicate respiratory tracts. Compared with external application of traditional Chinese medicine, meteorite warm moxibustion does not require frequent changes of drugs, is easier to operate, and the warming effect of the meteorite lasts longer, and can exert a more lasting therapeutic effect ^[7,8]. These advantages make Bianstone warm moxibustion therapy more applicable in the care of children with gastrointestinal diseases and can better meet clinical nursing needs.

However, when actually applying Bianstone warm moxibustion therapy, some details need to be paid attention to. First of all, the temperature of the stone must be adjusted according to the age and tolerance of the child. The skin of younger children is more delicate, so the temperature should be lowered appropriately, generally controlled at 38–40 °C to avoid burns; secondly, the acupoints must be accurately selected. The acupoint locations of children are slightly different from those of adults. Nurses need to be proficient in locating acupoints in children to ensure the therapeutic effect; finally, the child's reaction must be closely observed. Due to the limited expression ability of children, nurses need to judge whether the child is comfortable by observing the child's crying, skin color, etc., and adjust the treatment plan in a timely manner ^[9,10]. Only by doing these details well can the Bianstone warm moxibustion therapy work better and provide better nursing services for children.

Combining the results of this study and clinical application, it can be seen that Bianstone warm moxibustion therapy combined with routine nursing has a significant effect in the care of children with gastrointestinal diseases. It can effectively speed up the symptom relief of children, improve the quality of life, reduce the occurrence of complications, and has the advantages of simple operation, safety, reliability, and low cost.

About the author

Yang Yang (199.01-) female; Han nationality; native of Taizhou, Jiangsu; undergraduate degree; supervisor nurse; research direction: application of Bianstone warm moxibustion therapy in pediatric gastrointestinal diseases;

Disclosure statement

The author declares no conflict of interest.

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