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Clinical Effect Analysis of Radial Extracorporeal Shock Wave Therapy with Compound Ultrasonic Treatment for Frozen Shoulder

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Abstract: Objective: To evaluate the effect of radial extracorporeal shock wave and compound ultrasonic treatment in patients with frozen shoulder. To evaluate the effect of Radial Extracoporeal Shock Wave Therapy (RESWT) and compound ultrasonic therapy in frozen shoulder patients. **Methods**: 68 patients with frozen shoulder treated in our hospital from January 2020 to January 2021 were divided into two groups according to the random number table method. 30 patients in the control group and 30 patients in the observation group were given compound ultrasonic treatment in the control group and radial extracorporeal shock wave treatment in the observation group. The VAS pain score, average temperature difference, ROM score and incidence of adverse reactions of the two groups were compared. **Results:** The VAS pain scores (3.12 ± 1.23) and (2.20 ± 1.55) in the observation group at the end of treatment and 8 weeks after treatment were lower than those (5.82 ± 1.56) and (4.26 ± 1.59) in the control group ($P < 0.05$). The average temperature difference at the end of treatment and 8 weeks after treatment in the observation group (0.25 ± 0.04) ºC, (0.21 ± 0.06) ºC was lower than that in the control group (0.79 ± 0.24) ºC, (0.65 ± 0.52) ºC, ($P < 0.05$). At the end of treatment and 8 weeks after treatment, the ROM scores of the observation group (28.63 ± 5.99) and (32.63 ± 9.85) were higher than those of the control group (25.12 ± 6.15) and (26.52 ± 7.51) ($P < 0.05$). The incidence of adverse reactions in the observation group (0.00%) was lower than that in the control group (16.67%), ($P < 0.05$). **Conclusions:** In the treatment of frozen shoulder patients, radial extracorporeal shock wave with compound ultrasonic therapy can better relieve the pain of patients, reduce adverse reactions, and improve the range of motion of shoulder joint, which is of great value in the field of clinical rehabilitation.

Keywords: Extracoporeal shock wave therapy; Compound ultrasonic therapy; Frozen shoulder; Pain; Skin temperature; Adversre reaction

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1. Introduction

Compound ultrasonic is a combination therapy of physical factors, which mainly applies Transcutaneous Electrical Nerve Stimulation (TENS) and focused ultrasound to delay the degeneration of articular cartilage and relieve joint pain [1]. Patients with frozen shoulder will suffer from pain and limited joint movement. If not treated in time, joint dysfunction and muscle atrophy will occur, seriously affecting the daily living activities of patients [2-4]. Acupuncture, medium frequency electrotherapy, drug therapy and extracorporeal shock wave therapy are commonly used in clinical treatment for frozen shoulder pain, and massage or manipulation is used for joint movement limitation. There are few studies on the treatment of frozen shoulder by compound ultrasonic therapy, especially the study of compound ultrasonic therapy with extracorporeal shock wave therapy has not been reported. In order to evaluate the effect of radial extracorporeal shock wave and compound ultrasonic therapy on frozen shoulder patients, 68 patients with frozen shoulder were selected for clinical efficacy analysis.

2. Information and Methods

2.1 Baseline Data

68 patients with frozen shoulder were included in our hospital. The patients were enrolled from October 2018 to June 2021. They were randomly divided into control group (ultrasonic treatment) and observation group (radial extracorporeal shock wave treatment), 34 cases/group. In the control group, there were 18 females and 16 males; the average age was (49.63 ± 3.22) years; the duration of the disease ranged from 4 months to 16 months, with an average duration of (9.65 ± 1.56) months. In the observation group, there were 22 females and 12 males; the average age was (49.88 ± 3.15) years; the course of disease ranged from 4 months to 15 months, and the average course of disease was (9.48 ± 1.43) months. There was no significant difference between the two groups ($P > 0.05$).

Inclusion criteria: (1) The patient presented varying degrees of shoulder pain and limited shoulder joint movement. X-ray examination showed thickening of the axillary recess wall more than 5 mm, which was diagnosed as frozen shoulder; (2) Patients volunteered to participate in the study and signed informed consent; (3) This study was approved by the ethics committee.

Exclusion criteria: (1) Mental disorder; (2) Patients with severe cardiovascular and cerebrovascular diseases; (3) Patients with neuropathy; (4) Pregnant and lactating women.

2.2 Method

In the control group, radial extracorporeal shock wave therapy was performed [5]. The patient was in the sitting or lateral decubitus position, the affected shoulder was exposed and abducted, and coupling agent was applied to the pain point, supraspinatus outlet, and the anterior and posterior joint capsule of the shoulder. The impact dose was 12 Hz, the air pressure was 2 bar, and the impact times were 2000 times for each part. The handle pressure could be appropriately increased according to the patient's tolerance. The patient was treated once every 5 days, 5 times as a course of treatment, and the treatment lasted for 3 courses. Nerve disfigurements and important blood vessels are avoided during treatment.

In the observation group, divergent extracorporeal shock wave was used for treatment and combined ultrasonic arthritis treatment instrument was used for treatment. The frequency parameter was set at 0.6 mhz, the output power was 0.6 W, the output waveform was pulse-modulated sine wave, the focal plane distance of the treatment head was 25 mm, and the treatment depth was 15-50 mm. The pulse width and output frequency of transcutaneous neuromuscular electrical stimulation (TENS) were set as 200 μs, and the alternating output density waves of 50 Hz/100 Hz were set as 25 mA to 40 mA, and the output current and depth were adjusted in time according to patients' performance and tolerance during treatment [6,7]. The treatment site was the anterior and posterior joint capsule and other pain points of the shoulder joint, and the treatment frequency was 20 minutes twice a day.

2.3 Observation Indicators

The scores of the two groups were calculated: (1) VAS pain score, 0 was painless and 10 was extreme pain. (2) The average temperature difference was recorded by infrared thermal imaging equipment. (3) Improvement of ROM score in shoulder abduction and pronation. (4) The incidence of adverse reactions was calculated, including skin redness, pain, swelling, numbness and palpitation.

2.4 Statistical Treatment

Statistical software SPSS23.0 was used to process the data of two groups of frozen shoulder patients. VAS pain score, skin temperature difference and ROM score were expressed by (Mean ± Standard Deviation). T-test was used for independent sample test. The incidence of adverse reactions was expressed in (%), and the difference was tested by chi square. If it has statistical significance, then ($P < 0.05$).

3. Results

3.1 Calculate the VAS Pain Score of the Two Groups

There was no significant difference in VAS pain score between the observation group and the control group before treatment ($P > 0.05$). VAS pain scores at the end of treatment and 12 weeks after treatment in the observation group were lower than those in the control group ($P < 0.05$). See Table 1.

Table 1. VAS pain scores of the two groups were calculated{$\bar{x} \pm s$, min}

group	Before treatment	At the end of treatment	12 weeks after treatment
Observation group (n = 34)	6.52±1.65	3.12±1.23	2.20±1.55
Control group (n = 34)	6.63±1.59	5.82±1.56	4.26±1.59
T value	0.2629	7.4442	5.0813
P value	0.7935	0.0000	0.0000

3.2 Calculate the Average Temperature Difference between the Two Groups

There was no significant difference in the average temperature difference between the observation group and

the control group before treatment (P > 0.05). The average temperature difference at the end of treatment and 12 weeks after treatment in the observation group was lower than that in the control group (P < 0.05). See Table 2.

Table 2. calculate the average temperature difference between the two groups{$\bar{x} \pm s$, ℃}

group	Before treatment	At the end of treatment	12 weeks after treatment
Observation group (n = 34)	1.15±0.53	0.25±0.04	0.21±0.06
Control group (n = 34)	1.19±0.55	0.79±0.24	0.65±0.52
T value	0.2868	12.1560	4.6040
P value	0.7753	0.0000	0.0000

3.3 Calculate the ROM Score in Shoulder Abduction and Pronations of the Two Groups

There was no significant difference in ROM score in shoulder abduction and pronation between the observation group and the control group before treatment (P > 0.05). The ROM scores of the observation group at the end of treatment and 12 weeks after treatment were higher than those of the control group (P < 0.05). See Table 3.

Table 3. ROM scores of the two groups were calculated{$\bar{x} \pm s$, min}

group	Before treatment	At the end of treatment	12 weeks after treatment
Observation group (n = 34)	66.56±23.52	100.65±13.65	165.65±15.52
Control group (n = 34)	66.46±24.05	82.65±11.56	155.05±13.23
T value	0.0173	5.8676	3.0307
P value	0.9862	0.0000	0.0035

3.4 Calculate the Incidence of Adverse Reactions in the two Groups

The incidence of adverse reactions in the observation group was lower than that in the control group (P < 0.05). See Table 4.

4. Discussion

At present, physical factors commonly used in clinical treatment of frozen shoulder in China include intermediate frequency, low frequency, interference electricity, polarized light, magnetic vibration heat, microwave, short wave, ultra-short wave, ultrasonic and radial extracorporeal shock wave [8,9]. Ultrasonic mainly relies on ultrasound to penetrate human muscles and repair articular cartilage, but it has little obvious effect on immediate relieve the pain [10,11]. Radial extracorporeal shock wave is one of the effective physical factor therapies in the treatment of pain. Its main mechanism is to stimulate local blood vessels, accelerate the circulation speed in this area, and provide a better internal environment for tendon cell regeneration and functional repair. And in shock wave treatment can make the body C neural activation, the activation of C nerve can be within the organization or in the spinal cord to secrete a kind of substance P, after activating this nerve, nerve fibers in a period of time can't C production of substance P and substance P reduce neurogenic inflammatory conditions can be effectively controlled, so as to alleviate the pain of patients with locally. Neurogenic inflammatory response can effectively help tissue repair. In this process, tissues will also secrete growth factors and related substances to activate nerve fibers and promote their repair, so as to achieve the therapeutic effect of tissue repair and analgesic effect. In this process, a certain energy gradient and torsional tension can occur between different tissues during the shock wave transmission phase, which can cause the adhesive tissue to release, thus relieving the trapped microvessels and nerve bundles. In this process, the impact of shock wave will cause damage to surrounding tissues and lead to inflammatory reaction, which will improve the permeability of capillaries, release relevant inflammatory mediators and substances, accelerate the healing of the body and reduce the occurrence of symptoms [12-15].

Table 4. calculate the incidence of adverse reactions {n (%)}

group	Red skin	pain	swelling	Numbness	palpitation	incidence rate
Observation group (n = 34)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Control group (n = 34)	1 (3.33)	1 (3.33)	1 (3.33)	1 (3.33)	1 (3.33)	5 (16.67)
χ^2 value	-	-	-	-	-	5.4545
P value	-	-	-	-	-	0.0195

The results of this study showed that VAS pain score of the observation group was lower than that of the control group at the end of the intervention and 12w after the intervention. The average temperature difference of the observation group was lower than that of the control group. In ROM Angle improvement, the observation group showed advantages compared with the control group. The incidence of AR in the observation group was lower than that in the control group, $P < 0.05$. It is suggested that the treatment of frozen shoulder with radial extracorporeal shock wave combined with compound ultrasonic therapy can better reduce pain, improve local temperature changes, improve the range of motion of shoulder joint abduction and internal rotation, and reduce the incidence of adverse reactions.

5. Conclusions

To sum up, the treatment of frozen shoulder with radial extracorporeal shock wave can achieve certain results, but the combination of radial extracorporeal shock wave combined with compound ultrasonic therapy can better relieve the pain of patients, reduce adverse reactions, and improve the range of motion of shoulder joint, which is worthy of reference and promotion in clinical treatment.

The other also has shortcomings, this study did not explore the patients choose possible differences between surgery and conservative treatment, and combined with musculoskeletal ultrasound and the methods of electric figure around the shoulder joint in patients with frozen shoulder agonist and antagonist muscle activation of the corresponding detection and analysis, the correlation and feature remains to be further research.

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Discussion on the Medication Rule of Children's Cough in Ancient Medical Books Based on Data Mining

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Abstract: Objective: To explore the medication rule of children's cough in ancient medical books by using the traditional Chinese Medicine Inheritance calculation platform. **Methods:** By collecting the prescriptions for the treatment of children's cough in the Great Dictionary of traditional Chinese medicine prescriptions, the prescription information was entered into the traditional Chinese Medicine Inheritance calculation platform (V3.0), the frequency, four properties, five flavors and meridian tropism of the entered prescriptions were counted, and the common drug pairs, core combinations and new prescription combinations were obtained by using the methods of association principles and cluster analysis. **Results:** A total of 106 prescriptions and 203 traditional Chinese medicines were selected, and the cumulative use frequency was 1061 times. Among them, there are 12 traditional Chinese medicines used more than 20 times, and the top three are Platycodon grandiflorum, Bitter almond and Pinellia ternary. The top three traditional Chinese medicine efficacy categories are expectorant drugs, antitussive and antiasthmatic drugs, antipyretic drugs and drugs for relieving exterior syndrome. The four properties are mainly warm and cold, the five flavors are mainly spicy, bitter and sweet. It's Channel tropism mostly goes to lung, spleen and stomach meridians. Five common couplet medicines, twenty-three core combinations of traditional Chinese medicine and three new traditional Chinese medicine prescription were obtained. **Conclusions:** Ancient doctors used cold and warm drugs to treat children's cough. Most of the drugs are pungent, bitter and sweet. Drugs mainly belong to lung meridian, followed by spleen meridian and stomach meridian, the main treatment methods are to expel wind and clear heat, eliminate dampness and dissipate phlegm, dispersing lung and relieve asthma, and appropriately add drugs for reducing Qi and moistening intestines.

Keywords: Traditional Chinese Medicine Inheritance Calculation Platform; Cough in children; Dictionary of traditional Chinese medicine prescriptions; Medication rule

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1. Introduction

Cough is a common symptom of children lung disease. The grain of skin and the texture of the subcutaneous flesh of children is loose. Lung is often insufficient and other physiological characteristics, resulting in frequent cough. In recent years, under the influence of environmental pollution, climate change and other factors, the incidence of wheezing diseases in children has increased year by year, which is also positively correlated with the incidence of cough in children [1]. Traditional Chinese doctor believes that children's cough is the result of external and internal injury. The disease is located in the lung, often involving the spleen and heart. The pathogenesis is that the lung is affected by exogenous pathogen. The function of lung clearing and carrying downward is weakened and the adverse rising of pulmonary qi. At present, western doctor mainly uses antibiotics drugs, antitussive and antiasthmatic drugs and expectorants drugs. Although they have quick effects, they are easy to relapse and have great side effects. Traditional Chinese doctor has unique advantages in the clinical treatment of children's cough. "Dictionary of Traditional Chinese Medicine Prescriptions" [2] recorded the prescriptions of various generations of doctors since the Qin and Han Dynasties, which is the crystalli-

zation of the doctors of past dynasties. Due to the large number and variety of prescriptions, this study collected and screened the prescriptions used to treat children's cough in the Dictionary of Traditional Chinese Medicine Prescriptions. The prescription composition is completely entered into the software of traditional Chinese Medicine Inheritance calculation platform (V3.0) for data analysis. Excavate the four properties, five tastes and meridian tropism for the treatment of children's cough, obtain the combination of drug pairs and basic prescriptions, and excavate the prescription of new drugs on this basis, so as to provide new ideas for the treatment of this disease with traditional Chinese medicine.

2. Data and Methods

2.1 Inclusion Criteria

It is clearly recorded in the Dictionary of Traditional Chinese Medicine Prescriptions (Volume 1,2nd edition) that the indications or functions include prescriptions of "pediatric cough", "pediatric phlegm" or "pediatric asthma". The prescription is complete, including decoction, pill and Chinese patent medicine preparation.

2.2 Exclusion Criteria

Prescriptions with exactly the same drug composition but different dosage forms, and prescriptions with drug taste less than 2 herbs.

3. Research Methods

3.1 Analysis Software

Traditional Chinese Medicine Inheritance calculation platform (V3.0) software [3] is provided by the Institute of traditional Chinese medicine, Chinese Academy of traditional Chinese medicine. It is upgraded from the auxiliary platform of traditional Chinese Medicine Inheritance (v2.5). It is mainly used for traditional Chinese medicine data analysis.

3.2 Data Standardization Processing

All the included traditional Chinese medicines are based on the Pharmacopoeia of the People's Republic of China [4]. The white stiff silkworm is unified as stiff silkworm, cinnabar is unified as cinnabar, white Poria cocos and red Poria cocos are unified as Poria cocos,and the Qing Pinellia ternary, French Pinellia ternary and prepared Pinellia ternary are unified as Pinellia ternary. Fried almonds and almonds are unified as Bitter almonds.

3.3 Data Entry

Download the data template in the traditional Chinese medicine inheritance calculation platform (V3.0), and completely input the prescription composition into the excel template according to the template requirements. The data are entered by one person and checked by the other to ensure the authenticity, accuracy and correctness of the data.

4. Data Analysis

Select "data management→data upload" to import the data in Excel into the software. Data mining was conducted for 106 prescriptions included in this study to analyze the frequency of traditional Chinese medicine prescriptions, efficacy, property and flavor, channel tropism, core drug pairs and new prescription mining.

5. Results

5.1 Drug Frequency

Select "Data analysis→Prescription analysis→Drug frequency" and import the data into Excel. The results showed that a total of 106 prescriptions meeting the standards were included, a total of 203 traditional Chinese medicines, with a cumulative use frequency of 1061 times, and 12 traditional Chinese medicines with a use frequency more than 20 times, with a cumulative use frequency of 309 times. The top three were Platycodon grandiflorum, Bitter almond and Pinellia ternary (Table 1).

5.2 Property and Flavor, Channel Tropism

Selecting "statistical analysis→four properties and five flavors statistics and meridian tropism statistics", it is concluded that ancient doctors used warm and cold drugs to treat children's cough. Most of the drugs were pungent, followed by bitter and sweet. It mainly belongs to lung meridian, followed by spleen meridian and stomach meridian (Figure 1, Figure 2 and Figure 3).

Table 1. Traditional Chinese medicine with medication frequency≥20 times

Serial number	Medicine	Frequency	Serial number	Medicine	Frequency
1	Platycodon grandiflorum	33	7	Mint	24
2	Bitter almond	33	8	Ginseng	23
3	Pinellia ternary	31	9	Ephedra	22
4	Baikal Skullcap	28	10	Ginger	21
5	Licorice	28	11	Dried orange peel	21
6	Poria cocos	25	12	Cortex Mori	20

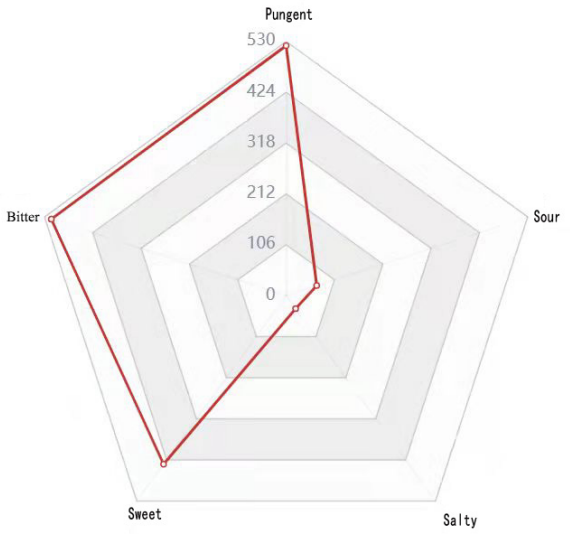

Figure 1. (Four properties distribution diagram)

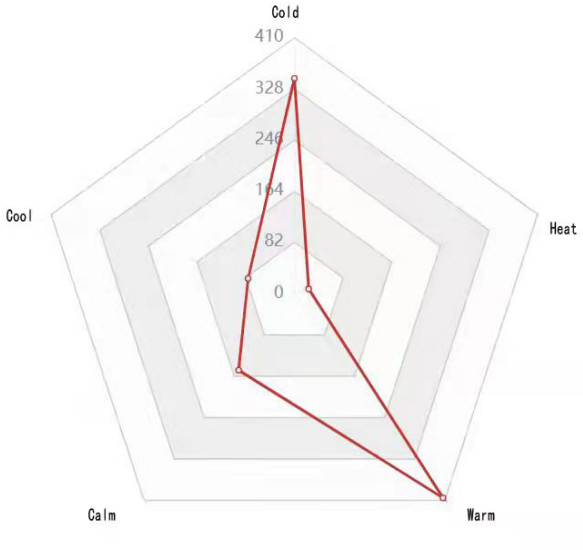

Figure 2. (Five tastes distribution diagram)

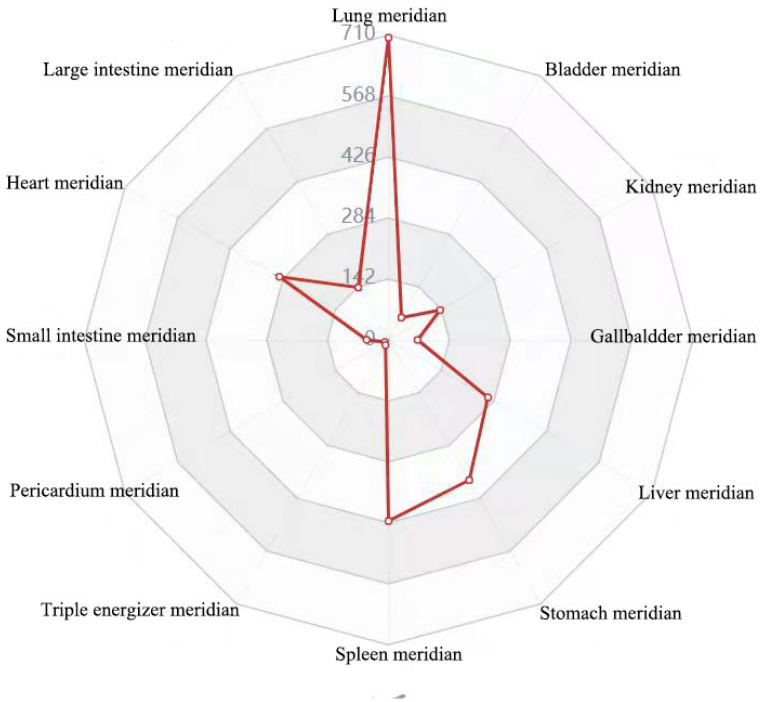

Figure 3. (Meridian tropism diagram)

5.3 Drug Efficacy

Select "statistical analysis→efficacy statistics", the results show that the included traditional Chinese medicine involves 21 different efficacy categories, of which the top three are expectorant drugs, antitussive and antiasthmatic drugs, antipyretic drugs and drugs for treating exterior syndromes (Figure 4).

5.4 Analysis of Cough Prescription Rule in Children Based on Association Principle

Select "Prescription analysis→Association Rule" and set the number of support to 10 and the confidence to 0.7. Support refers to the frequency of drug combination in the selected prescription, and confidence represents the probability of the occurrence of the next drug when the previous drug appears [3]. Under this parameter, 23 groups of high-frequency drug combinations with support ≥10 were obtained (Table 2). Select "Rule analysis" to obtain 5 association rules with confidence degree≥0.7 (Table 3). Select "Network Topology" to obtain a visual network display of association rules (Figure 5).

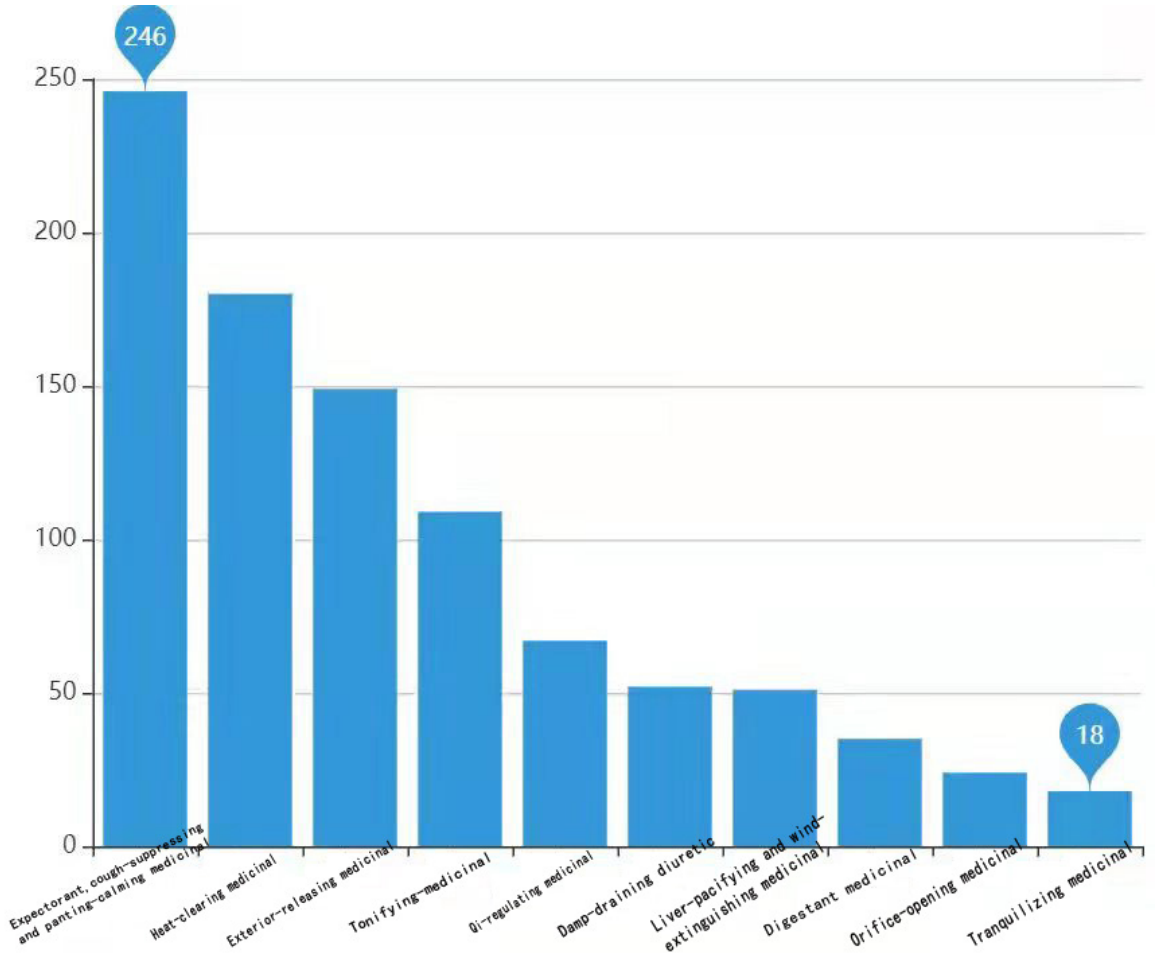

Figure 4. Frequency distribution of drug efficacy (top 10)

Table 2. Core combination based on association principle (support≥10)

Serial number	Drug combination	Frequency	Serial number	Drug combination	Frequency
1	Bitter almond, Baikal Skullcap	16	13	Bitter almond, Fructus Perillae	10
2	Bitter almond, Platycodon grandiflorum	14	14	Poria cocos, Cinnabaris	10
3	Bitter almond, Ephedra	14	15	Pinellia ternary, Poria cocos	10
4	Platycodon grandiflorum, Dried orange peel	14	16	Platycodon grandiflorum, Poria cocos	10
5	Pinellia ternary, Ginger	13	17	Ginseng, Ginger	10
6	Bitter almond, Cortex Mori	14	18	Platycodon grandiflorum, Fructus Aurantii	10
7	Platycodon grandiflorum, Baikal Skullcap	13	19	Bile arisaema, Cinnabaris	10
8	Mint, Cinnabaris	12	20	Bitter almond, Mint	10
9	Platycodon grandiflorum, Angelica decursiva	11	21	Pinellia ternary, Ginseng	10
10	Platycodon grandiflorum, Mint	11	22	Dried orange peel, Fructus Aurantii	10
11	Baikal Skullcap, Gypsum Fibrosum	10	23	Platycodon grandiflorum, Pinellia ternary	10
12	Baikal Skullcap, Ephedra	10			

Table 3. Analysis of common drug pair rules

Serial number	rule	confidence level
1	Fructus Perillae→Bitter almond	0.91
2	Gypsum Fibrosum→Baikal Skullcap	0.71
3	Fructus Aurantii→Platycodon grandiflorum	0.71
4	Fructus Aurantii→Dried orange peel	0.71
5	Cinnabaris→Mint	0.71

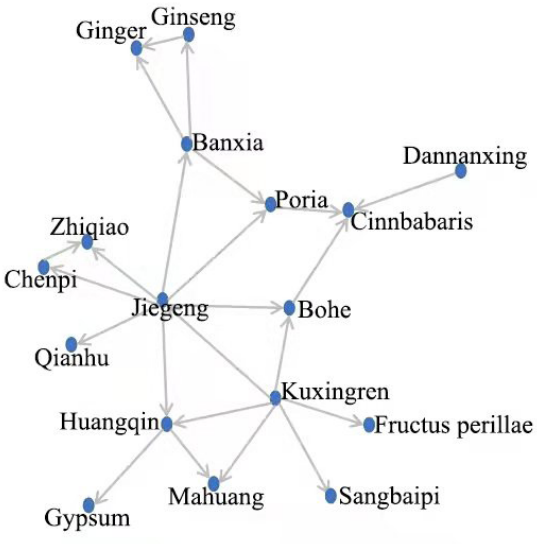

Figure 5. Visual network display diagram of association rule analysis

5.5 New Prescription Analysis Based on K-means Clustering

Select "prescription analysis→cluster analysis", set the number of clusters to "3", select "extraction combination", and extract three groups of new prescription combinations (Table 4) and visual network display diagram (Figure 6).

Table 4. new prescription combination based on cluster analysis

Serial number	new prescription combination
1	Mint-Bitter almond-Platycodon grandiflorum-Pinellia ternary-Baikal Skullcap
2	Dried orange peel-Pinellia ternary-Radices saussureae-Platycodon grandiflorum-Bitter almond
3	Licorice-Aster-Bitter almond-Ephedra-Baikal Skullcap

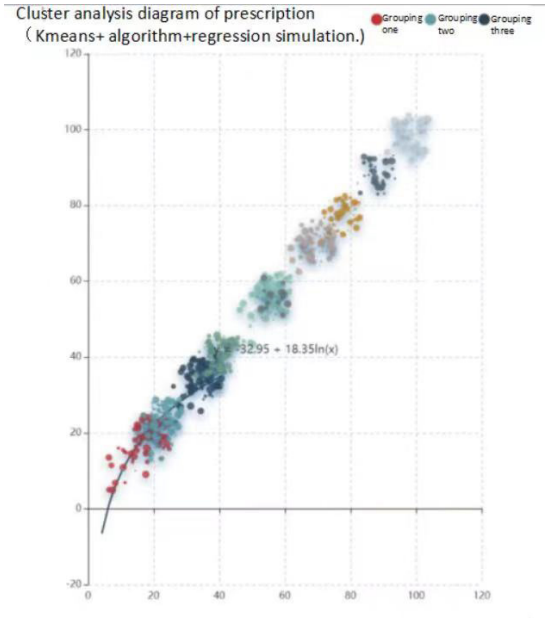

Figure 6. new prescription combination visual network display diagram

6. Discussion

The results showed that the ancient doctors used expectorant drugs, antitussive and antiasthmatic drugs in the treatment of children's cough, and Platycodon grandiflorum and Bitter almond are the most frequently used drugs. According to the Chinese Pharmacopoeia [4], Platycodon grandiflorum has bitter taste, acrid flavor and mild-natured. It belongs to the lung meridian. It has the functions of dispersing the lung, promoting the pharynx, eliminating phlegm and expelling pus. It is mainly used for cough and phlegm, chest tightness, pharyngalgia and hoarse sound, abscess of lung and vomiting pus. Bitter almond, bitter in flavor, little warm, has slightly poisonous, belongs to the lung and large intestine meridian, has the functions of lower adverse-rising energy, relieve a cough and preventing asthma, relaxing bowel, and is used for cough and asthma, fullness sensation in chest and excessive phlegm, dryness of the intestine and constipation. "Almond-Platycodon grandiflorum" is a common couplet medicines for relieving cough, dispelling phlegm and adjusting activities of qi [5]. Modern pharmacological studies show that Platycodon grandiflorum saponin, the active ingredient of Platycodon grandiflorum, has the effects of relieving cough and expectorant, anti-inflammatory and enhancing immunity. It has remarkable curative effect in the treatment of bronchitis, pharyngitis, bronchial asthma and other respiratory diseases [6]. Amygdalin in bitter almond will produce hydrocyanic acid in vivo, and an appropriate amount of hydrocyanic acid can relax bronchial smooth muscle, so as to alleviate cough [7]. Pulmonary dysfunction leads to adverse rising of pulmonary qi and coughing. Platycodon grandiflorum promotes lung qi and almond to descending qi and relieve asthma. When the two drugs are used together, one rises and one falls. The rise and fall are related to each other. If the activities of qi is smooth, the cough will be relieved.

From property and flavor and channel tropism, warm and cold drugs are often used for children's cough. The drugs are mostly acrid flavor and bitter, mainly belonging to the lung and spleen meridian. Children often have insufficient lungs and spleen, lung controlling respiration and fur, and the qi governs the breathing. Striae of the skin and muscles being loose of children. Weakened defensive qi, disturbance of diffusion and down bearing. When lung qi adverse rising of pulmonary qi cough occurs: The spleen is the foundation of the posteriority, and it governing transportation and transformation. Striae and interstitial space of children is loose, if coupled with improper feeding by parents. This will damage the transport and transformation function of spleen and stomach and easy to accumulate dampness into phlegm, then store it up in the lungs. It will affect lung governing diffusion, purification and descending and make cough more intense. If it is repeated for such a long time, the cough will be difficult to treat. According to "Essential Readings for Medical Professionals •Phlegm-fluid retention": "Spleen is the source of phlegm, the lung being the utensil for storing phlegm". It can be seen that the symptoms of children's cough are in the lung and the root is in the spleen. Those who have retention of phlegm and fluid should be treated with warm medicine. Therefore, warm medicine is commonly used for children's cough. And children have been known as "Pure Yang body Constitution". "Disease is easy transformed from sthenia fire", refining fluid into phlegm, causing endogenous cough with phlegm-heat syndrome. Therefore, warm medicine should be appropriately accompanied by cold medicine. Spicy can disperse and promoting the circulation of qi, and enhance the function of lung governing diffusion, purification and descending. Bitterness can dry dampness and clear heat. It can clear the fire of lung and stomach. It can stop coughing when it is used together with bitter, warm and cold traditional Chinese medicine.

Through the analysis of association principle, it is concluded that the drug combinations with high confidence are "Fructus Perillae→Bitter almond", "Gypsum Fibrosum→Baikal Skullcap", "Fructus Aurantii→Platycodon grandiflorum", etc.

These drugs have the effects of clearing heat, opening the inhibited lung-energy, relieving a cough, lower adverse-rising energy, resolving phlegm and relieving asthma. Among them, Fructus Perillae and Bitter almond also have the functions of relaxing bowel, "The lung and the large intestine being interior-exteriorly related". The large intestine peristalsis and defecation function are normal, which is conducive to the normal exertion of the function of lung governing diffusion, purification and descending. If the six hollow organs keep its dredging function and activities of qi is smooth, the cough will heal.

Based on cluster analysis, three new prescriptions for children's cough were obtained. According to the composition characteristics of the new prescription, the main treatment methods are dispersing wind to ease heat, drying damp and eliminating phlegm, freeing lung and relieving asthma, and appropriately add drugs for lower adverse-rising energy and moistening intestines. New prescription can be used for exogenous cough. New prescription can be used for phlegm dampness cough, and new prescription can be used for phlegm heat cough.

With the help of traditional Chinese Medicine Inheritance calculation platform, this study digs the ancient prescriptions for the treatment of children's cough. It is concluded that the treatment of children's cough is mainly based on to reduce phlegm, relieve a cough and relieving asthma, heat-clearing drugs, while, freeing the lung and relieving a cough and taking into account the spleen and stomach. Although the new prescription has certain reference value for the treatment of children's cough, it still needs to be tested by later clinical research.

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Speed up the Recovery Time of Swallowing Function of Patients after Partial Laryngectomy

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Abstract: Objective: To explore the practice effect of Quality Control Circle (QCC) on shortening the recovery time of swallowing function after partial laryngectomy. **Methods:** Set up a QCC group; select "Speed up the recovery time of swallowing function of patients after partial laryngectomy" as the topic; select a total of 36 patients with laryngeal cancer after partial laryngectomy in our ward from May 2019 (before activity) to July 2019 (after activity); investigate the time consuming of swallowing function training in laryngeal cancer patients after partial laryngectomy using theories and tools of QCC; analyze the influencing factors, then develop and implement the corresponding countermeasures; compare the time consumption of swallowing function recovery before and after activity. **Results:** After the QCC activity, the recovery time of swallowing function was reduced from 105 hours to 50 hours, achieving the expected goal. **Conclusions**: QCC activities can promote the recovery of swallowing function after partial laryngectomy, shorten the length of stay, improve patients' recovery confidence and reduce the workload of nurses, thus create a healthy, positive and excellent working environment for the nursing staff.

Keywords: Larynx; Partial resection; Swallowing function; Recovery time

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1. Introduction

In clinical nursing operation, there are many factors that affect the recovery time of swallowing function of patients after partial laryngectomy, and the non-standard swallowing instruction is the most direct factor, which may prolong the length of stay, reduce the postoperative comfort, and even cause doctor-patient disputes [1]. It has been reported that Quality Control Circle is of great significance to improve the quality of nursing work. In order to improve patients' satisfaction with the recovery of swallowing function after partial laryngectomy [2], the QCC activity with the topic of "speed up the recovery time of swallowing function of patients after partial laryngectomy" was carried out in our ward. The report is as follows.

2. Literature Review

1) The introduction of new techniques such as WeChat video and micro-classes, makes it easier for patients and their families to acquire disease-related rehabilitation knowledge after laryngectomy. (Lu yue, Li li, et al.)

2) The implementation of health education path evaluation form provides systematic, dynamic, continuous and standardized health knowledge education and skill guidance for laryngeal cancer patients. It has effectively stimulated the initiative and dynamic role of nurses, and improved patients' active participation and cooperation with treatment and nursing. In addition, patients' satisfaction with nursing work, knowledge rate of health education content and follow-up compliance after discharge were enhanced. (Zuo hongxia, et al.)

3. Project Plan

In order to ensure the well progress of the activity, under the leadership of the instructor Xu Wei and the circle chief Kuang Junwei, the circle members Yu Qin, Mo Muqiong, Sun Yulin and Wang Jiamin, etc., adopted the principle of 5W1H, namely WHO, WHEN, WHERE,

WHY and HOW, to draw up the gantt chart of the project plan. Based on the investigation results, according to Plato's 80/20 law, two major reasons (79%) were determined to be "non-standard swallowing instruction" and "patients fail to master swallowing training methods". Therefore, these two problems were taken as the focus of this activity. Through the discussion and analysis of the group members, the real causes of non-standard swallowing instruction were summarized as follows: lack of standardized swallowing function training instruction by nurses, lack of evaluation of patients' mastery of swallowing method, improper choice of food, and single form of education [3]. The circle members chose tasks freely according to their own working ability, followed PDCA management methods of the quality control circle (Plan, Do, Chek, and Action) and took corresponding countermeasures to solve the above main problems according to the project plan.

4. Project Implementation

Countermeasures were developed and implemented as follows:

1) Establish the instruction process of swallowing function: Standardize the intravenous infusion process, and taught by senior nurses, to make sure everyone can reach the standard [4].

2) All staff receive swallowing function training: Organize nurses of the whole department to study the related system, and teach the junior nurses emphatically, to give patients early access to comprehensive and standardized swallowing rehabilitation nursing guidance. It can improve the swallowing function of patients through effective breath-swallowing training, tongue muscle training, cough training, feeding training and so on, promote the improvement of swallowing and increase of food intake, improve the nutritional status of the body and relieve their bad mood at the same time. Thus, the length of stay was shortened and the patients' quality of life was improved.

3) Set up swallowing function training evaluation form: Standard evaluation form was used to provide accurate information for clinical nurses in assessing patients with swallowing disorders. To evaluate the progress of patients' swallowing function recovery, predict the possible problems and determine the nursing priorities according to the evaluation results [5]. Early intervention should be carried out for patients with problems of swallowing training, and effective preventive measures should be taken as soon as possible to minimize the recovery time of swallowing function and promote patients to recover as soon as possible.

4) Apply specialty food: Choose the proper food and drink according to the instruction of the paste-swallowing test. Coagulation powder is a food thickener specially designed for patients with dysphagia. It was widely used in the swallowing function training to reduce the risk of infection by aspiration [6].

5) Establish video teaching mechanism: According to the different educational level and understanding ability of patients, personalized education was carried out, and standard video demonstration was cited to visualize the training mode of patients. The contents included educations of feeding safety (for family members, patients and nursing workers), coagulation powder preparation standard, food and water intake, feeding skills (posture, body position, slow feeding in small bites on the unaffected side, etc.) and treatment scheme of sudden asphyxia or other unexpected events [7].

5. Project Evaluation Outcomes

Effects confirmation: After the implementation and improvement of countermeasures, bedside examination was carried out on the patients who underwent swallowing function training in our department in July 2019, in the same way as before the activity. According to the examination results, it took an average of 50 hours for the recovery of swallowing function after activity. Patients' satisfaction with swallowing function training and recovery was increased.

6. Discussion

The QCC activity can effectively speed up the recovery time of patients' swallowing function after partial laryngectomy in our ward. Our ward carried out this QCC activity, and the scoring of circle ability was relatively conservative [8]. Although the goal of improvement has been achieved, the relevant nursing process still needs to be improved, and measures should be further consolidated. Regular trainings and assessments should be conducted for new recruits and interns to ensure the quality of measures [9].

7. Conclusions

Quality Control Circle is an edge tool to improve the quality of nursing work. Through the implementation of this activity, circle members can actively participate in the nursing quality management of the department, take the initiative to seek and discover problems, and use the QCC approaches to solve the problems encountered in nursing work. Finally, it has improved the quality of nursing work, and created a healthy workplace together.

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Second Trimester Pregnancy and Adenomyosis Causing Sigmoid Colon Compressive Obstruction Complicating Sepsis: A Case Report and Literature Review

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Abstract: Background: Gestational intestinal obstruction (GIO) is an uncommon but critical disease. Compared with other types of GIO, sigmoid colon compressive obstruction is even less likely to encounter in clinical practice. In this paper, we report the first case of sigmoid colon compressive obstruction complicating sepsis associated with pregnancy and adenomyosis. **Case summary:** A 28-year-old woman at 19^{+1} week of gestation presented to the emergency department with lower abdominal pain for 2 hours after meal. Ultrasound revealed intrauterine gestation, singleton alive, thick posterior uterine wall as well as adenomyosis suspected. Computed tomography (CT) revealed that the sigmoid colon was suspected to be compressed with intestine above the obstructive site in the state of dilation and gas loading. Conservative treatment was initiated. However, at that night, the patient's condition worsened and bedside ultrasound revealed singleton stillbirth. Laboratory examinations revealed sepsis. The patient was transferred to ICU and exploratory abdominal surgery was performed. Exploration confirmed that the sigmoid colon was adhered and compressed posterior to the uterus and proximal large intestines were dilated with multiple ruptures of seromuscular layer. Gastrointestinal decompression was performed with 20 cm of obstructive sigmoid colon removed. Two days Later, forceps curettage was performed. The patient recovered well after the surgery. **Conclusions:** We report the clinical presentations, diagnosis, etiology, treatment and prognosis of a pregnant patient with sigmoid colon compressive obstruction caused by the pregnant uterus and adenomyosis. Timely diagnosis and treatment are of great significance to save maternal and fetal lives.

Keywords: Intestinal obstruction; Pregnancy; Sigmoid colon; Adhesion; Adenomyosis; Case report

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1. Introduction

Gestational intestinal obstruction (GIO) is a rare disease with incidence of approximately 1:1500-1:66431 in pregnancies [1]. Although GIO is relatively uncommon, it could be pretty dangerous for both mother and fetus with significant fetal mortality of 36% in the second trimester and 64% in the third trimester [2]. Therefore, for pregnant patients with intestinal obstruction, early identification as well as timely and effective treatment are of vital importance to avoid severe complications and save their lives [3].

Causes of GIO include: adhesions (54.6%), intestinal torsion (25%), colorectal carcinoma (3.7%), hernia (1.4%), appendicitis (0.5%) and others (10%) [3]. For adhesive intestinal obstruction, conservative treatment is recommended while laparotomy is preferred for other causes [4]. In terms of lesion site, sigmoid obstruction is relatively rare to encounter in clinical practice [5]. Besides, in patients with sigmoid obstruction, volvulus rather than adhesion is the more common cause since the sigmoid colon tends to twist around itself [6].

Adenomyosis is the benign invasion of endometrium into the myometrium, producing a diffusely enlarged uterus with heavy menstrual bleeding and dysmenorrhea [7]. The gold standard for diagnosis of adenomyosis is pathologic examinations but imaging studies, such as transvaginal ultrasound and magnetic resonance imaging can

also provide clues for the diagnosis of adenomyosis [8]. Previous study showed that transvaginal ultrasound had a pooled sensitivity of 72% (95% CI 65-79%), specificity of 81% (95% CI 77-85%) for the diagnosis of adenomyosis [9]. Signs indicating adenomyosis include asymmetric thickening of myometrium (especially thick posterior wall), myometrial cysts, myometrial nodules, linear striations, poor definition of the endomyometrial junction and so on [10].

So far, no medical therapy that can treat adenomyosis while still allowing patients to conceive has been found [11]. Previous research has shown that adenomyosis has a negative impact on the outcome of pregnancy [12].

In this paper, we firstly report a rare case with sigmoid colon compressive obstruction caused by the second trimester pregnancy and adenomyosis. To the best of our knowledge, this is the first case of sigmoid colon compressive obstruction reported caused by pregnancy and adenomyosis.

2. Case Presentation

Chief complaint

A 28-year-old woman at 19^{+1} weeks gestation presented to the emergency department with lower abdominal pain for 2 hours after meal.

History of present illness

The patient developed abdominal pain with nausea and retching 2 hours ago after a diet of cold food. The pain was characterized with paroxysmal progression and was sharp in quality, which could not be relieved after rest. The patient could not stand on her own and had a poor appetite. She denied fevers, rigor, hematochezia, melena, vaginal discharge or vaginal bleeding. She did not receive any treatment before her presentation to the emergency department. She denied recent history of dizziness, headache, vision blurring, chest tightness, palpitation, lower extremities edema or any other discomfort. Weight gain was not notable during gestation.

History of past illness

Gravida 1, Para 0-0-0-1. No previous history of abdominal or pelvic operation. No other history is notable.

Physical examination

Painful expression was noted. The patient's heart rate was 92 bpm and blood pressure was 122/69 mmHg. She had a height of 150 cm, weight of 37 kg and her BMI was 15.4 kg/m^2, indicating a state of wasting. Abdominal examination revealed tenderness and rebound tenderness. On inspection, gastral, intestinal pattern and peristalsis were noted. Fetal heart rate was 150 bpm and uterine contraction was once per 2-3 min, lasting for 10 sec each. Under speculum inspection, no vaginal discharge or vaginal bleeding, no dilation of cervix, no tissue obstruction were noted and length of the cervix uteri was less than 1 cm on crude inspection.

Laboratory examinations

Laboratory examinations found platelets of 56*103/ul, leukocytes of 21.15*10^9/L, neutrophils of 93.9% with C-reactive protein (CRP) of 299.4 mg/L and procalcitonin (PCT) of >100 ng/mL suggesting a state of sepsis with SOFA score of 2 (Table 1)[13]. Other laboratory examination results were not notable.

Table 1. Laboratory Tests

Parameter	Unit	Reference	Result
PaO_2/FiO_2	kPa	≥53.3	61.6
Platelets	10^3/uL	≥150	56↓
Total Bilirubin	umol/L	<20	6.6
MAP	mmHg	>70	86.6
Creatinine	umol/L	<110	44
Leukocytes	10^9/L	3.5-9.5	21.15↑
Neutrophils	%	40-75	93.9↑
PCT	ng/mL	0-0.05	>100↑
CRP	mg/L	0-6	299.4↑
D dimer	ug/mL	0-0.05	>20↑
Serum lipase	U/L	13-60	408↑
Serum amylase	U/L	0-125	236↑

PaO_2=Oxygen tension of the arteries, FiO_2=Fraction of inspiration O_2, MAP=mean arterial pressure, PCT=Procalcitonin, CRP=C-reactive protein

Imaging examinations

In the emergency department, obstetrical ultrasound was performed and revealed the following:

1) Intrauterine gestation and singleton alive. The fetus size was consistent with gestational age. 2) Placenta grade 0. Amniotic fluid amount was normal. 3) The posterior uterine wall was significantly thick suggesting adenomyosis. 4) Endocervical canal was opened as U shape with length of 11mm and width of 20mm. Length of other part of cervix was 7 mm. 5) Intestines were dilated. Gas and liquid levels were found in the intestine with a small amount of peritoneal effusion indicating intestinal obstruction (Figure 1). According to the symptoms, physical examination and ultrasound results, the fetus was still in a safe condition and intestinal obstruction was suspected. Thus, an abdominal computed tomography (CT) was performed and confirmed the diagnosis of sigmoid obstruction caused by the thick posterior wall of the uterus (Figure 2).

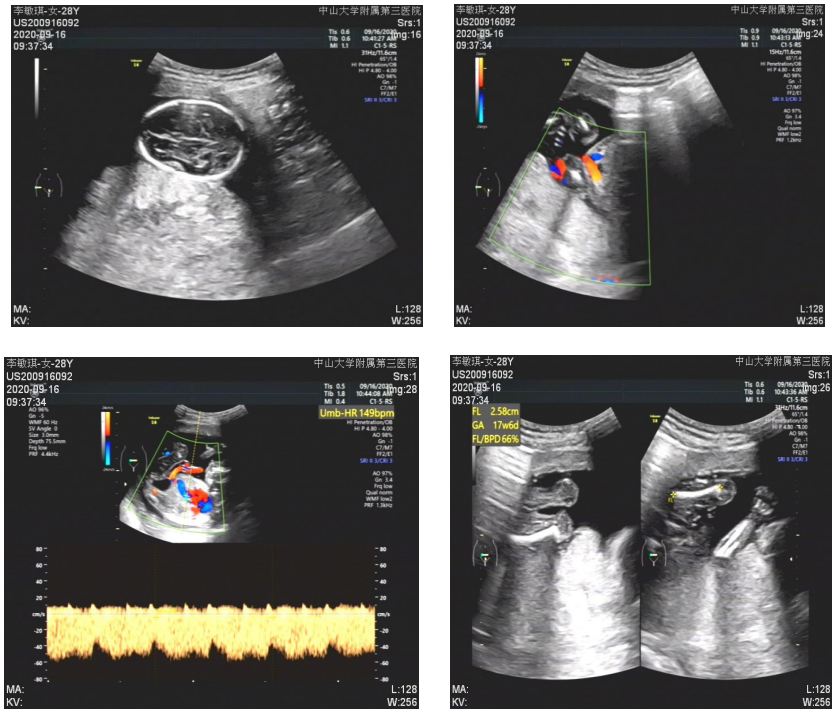

Figure 1. Obstetrical ultrasound showing: 1.Intrauterine gestation and singleton alive. On measurement, the fetus size is consistent with gestational age. 2. Placenta grade 0. Amniotic fluid amount is normal. 3. The posterior wall of the uterus is significantly thickened suggesting adenomyosis. 4. Endocervical canal is opened as U shape with length of 11 mm and width of 20 mm. Length of other part of cervix is 7 mm. 5. The intestines are dilated. Gas and liquid levels are found in the intestine with a small amount of peritoneal effusion indicating intestinal obstruction.

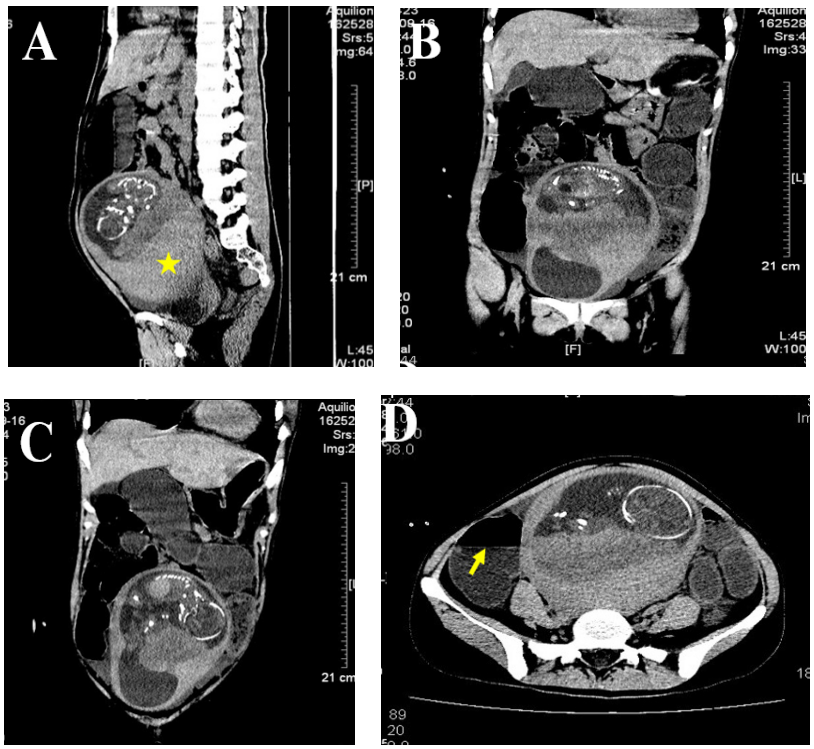

Figure 2. Computed tomography findings. A: Sagittal plane shows the thick posterior wall of the uterus (yellow star) and intestines above the site of obstruction are in the state of obstructive dilation and gas loading. B & C: Coronary planes show extremely dilated intestines with gas loading(yellow arrow) as well as peritoneal effusion. D: Transverse plane shows the thick posterior wall of the uterus and air fluid level (yellow arrow) indicating intestinal obstruction.

3. Final Diagnosis

Sigmoid colon obstruction caused by compression and adhesion of the gravid uterus was diagnosed.

4. Treatment

Once the patient presented to the hospital, emergency medical consultation of general surgery and gastroenterology medicine were demanded and conservative treatment was suggested including gastrointestinal decompression, intravenous volume expansion, water and electrolytes balance maintaining and so on. However, on the night of the admission, the patient's condition took a quick turn for the worse with temperature 37 ºC, heart rate 140-150 bpm and respiratory rate 24 breaths per minute. Fetal heart rate was unable to be auscultated and emergency bedside ultrasound revealed singleton stillbirth.

Emergency laparotomy was performed and the sigmoid colon was found to be compressed posterior to the uterus with proximal large intestines dilated and multiple ruptures of seromuscular layer. The posterior wall of uterus was adhesive to the intestine and was difficult to separate (Figure 3. A & B & C). Gastrointestinal decompression was then performed and 20 cm of obstructive sigmoid colon was removed with descending colon dissociated and dragged out through the left abdominal wall (Figure 3D). Fistulation was then performed.

Two days after the surgery, forceps curettage under ultrasound guiding was performed. Bedside ultrasound later that day revealed enlarged uterus and uneven echo of the muscular layer of posterior wall indicating adenomyosis.

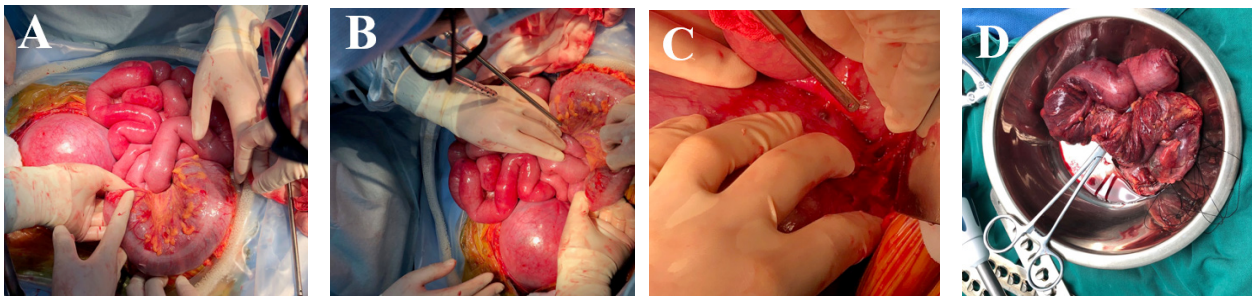

Figure 3. Intra-operative findings. A & B: The exploration revealed that the sigmoid colon was found to be compressed posterior to the uterus and proximal large intestines were dilated with multiple ruptures of seromuscular layer. C: The posterior wall of uterus was adhesive to the intestine and was difficult to separate. D: Gastrointestinal decompression was then performed: 20cm of obstructive sigmoid colon was removed.

5. Outcome and Follow-up

The patient developed thrombocytopenia after the surgery and recombinant thrombocyte injection was used for platelet count elevation. Stool culture from orificium fistulae revealed growth of oidium tropioale. Follow-up treatment included parenteral nutrition, imipenem and cilastatin sodium, fluconazole and so on. The patient was discharged 12 days after operation.

Stoma anastomosis was performed in Southern Hospital 5 months later and the patient recovered well with satisfying digestive system function.

6. Discussion

A search was conducted for all the case reports published in English from database inception to Jul 28, 2021 in in PubMed, Web of Science Core Collection, and Embase using search terms "(((intestinal obstruction) AND (pregnancy)) OR (gestational intestinal obstruction)) AND (sigmoid colon) AND (case report)". In all, 122 abstracts were retrieved and all the articles on the subject were reviewed, read and searched for additional references, resulting in 30 cases of sigmoid volvulus in pregnancy being indexed. Furthermore, we selected all the cases published in 10 years and organized the data into Table 2 to discuss the clinical characteristics and treatment options of GIO (Table 2).

According to our search results, 88.2% of the cases (15/17) happen in the third gestational trimester and all the cases are caused by intestinal volvulus or knotting. This is the first case report of a 28-year-old female with sigmoid colon obstruction caused by the compression and adhesion of the gravid uterus. Radiological examinations of GIO include ultrasound, X ray, CT, MRI with 9 cases receiving ultrasound, 8 cases receiving X ray, 5 cases receiving CT and 4 receiving MRI. Type of radiological examination appears to have no influence on maternal or fetal outcomes. GIO is reported to be a critically dangerous condition with high mortality especially for the fetus [14]. However, in all 17 cases, fetal death occurs in only 3 cas-

Table 2. Case Review of Compressive Sigmoid Obstruction

Year	Author	Age(yr)	GW	RE	Diagnosis	Treatment	Outcome	
							Maternal	Fetal
2011	Togo, A. et al.	27	25	US XR	Sigmoid volvulus	Sigmoid resection Primary anastomosis Maintained pregnancy	Recovery	Survival No complications
2012	Dray, X. et al.	31	37	CT	Sigmoid volvulus	Endoscopic reduction Induced labor	Recovery	Survival No complications
2014	Palmucci, S. et al.	31	31	US MRI	Sigmoid volvulus	Laparotomy Caesarean operation	Recovery	Preterm survival No complications
2014	Ahmad, A. et al.	33	26	XR	Sigmoid volvulus	Conservative treatment Recur at 35 GW Sigmoid colectomy Maintained pregnancy	Recovery	Survival No complications
2014	Kumar, S. et al.	42	37	US	Sigmoid volvulus	Laparoscopic colostomy Caesarean operation	Recovery	Survival No complications
2015	Al Maksoud, A. M. et al.	24	26	XR CT	Sigmoid volvulus	Sigmoid colectomy Caesarean operation	Recovery	Preterm survival 10 weeks in PICU
2015	Dhar, H. et al.	25	34^{+1}	US XR	Sigmoid volvulus	Detorsion and sigmoidopexy Maintained pregnancy	Recovery	Survival No complications
2015	Bajaj, Mohit et al.	23	36^{+5}	XR MRI	Sigmoid volvulus	Endoscopic decompression Induced labor	Recovery	Survival No complications
2016	Maunganidze AJ et al.	20	13	US	Ileosigmoid knot	Intestinal resection Maintained pregnancy	Recovery	Miscarriage
2016	Serafeimidis, C. et al.	21	30	XR MRI	Sigmoid volvulus	Laparoscopic decompression Maintained pregnancy	Recovery	Survival No complications
2018	Alrahmani, Layan et al.	25	32	US	Sigmoid volvulus	Laparoscopic sigmoidectomy Induced labor at 38^{+1} GW	Recovery	Survival No complications
2019	Rottenstreich, M. et al.	26	36	XR CT	Sigmoid volvulus	Sigmoid decompression Maintained pregnancy	Recovery	Survival No complications
2020	Zhao, Xin-Yu et al.	31	36^{+2}	US CT	Colon volvulus Midgut malrotation	Surgery Maintained pregnancy	Recovery	Survival No complications
2020	Cortez, N. et al.	26	30^{+5}	US MRI	Sigmoid volvulus	Endoscopic suctioning Catheter drainage Maintained pregnancy	Recovery	Survival No complications
2021	Simsek, D. et al.	19	30	US	Sigmoid volvulus	Total colectomy End-ileostomy Termination of pregnancy	Recovery	Death Induced labor.
2021	Watanabe, Toshiaki et al.	19	33	XR CT	Sigmoid volvulus	Intestinal resection Caesarean operation	Recovery	Preterm survival No complications

GW=Gestational weeks, RE=Radiological Examinations, US=Ultrasound, XR=X-ray, CT=Computerized tomography, PICU=Pediatric intensive care unit.

es. This is likely to be related with selection bias which indicates that doctors tend to report cases with better prognosis. It is worth noting that sepsis occurs in all three cases with fetal death indicating an increased risk of fetal death in patients with GIO complicated with sepsis.

The gestational age of this patient is only 19^{+1} weeks and she had never received any abdominal or pelvic surgery. Since GIOs more often happen at late pregnancy and most of the adhesive intestinal obstructions are related to surgery on the abdomen or pelvis [3], occurrence of compressive intestinal obstruction in this patient is inconceivable.

We noticed that the BIM of this patient is only 15.4, indicating that the patient is extremely wasting and there is little fat tissue depositing in the pelvis, which may create conditions for the compression. What's more, the posterior wall of patient's uterus is impressively thick and ultrasound indicates that there may be adenomyosis with this patient. The thick posterior uterine wall can cause compression and adhesion of the sigmoid colon.

The patient was admitted to our hospital only 2 hours after the abdominal pain. At admission, maternal vital signs were stable and the fetus was in good condition. However, within 24 hours, the fetus is found dead and the mother's condition also worsened rapidly. Results of the laboratory examinations revealed low platelet level as well as evidence of infection. According to the latest diagnostic criteria for sepsis, the patient was in a state of sepsis with SOFA score of 2 and infection [13], which could also be judged from the sign of peritoneal irritation and ascites. Hence, the rapid deterioration of the patient's condition might be related to the occurrence of enterogenous infection and sepsis.

GIO is a dangerous condition especially for the fetus. As noted in studies published previously, maternal mortality of GIO is approximately 6% while fetal mortality remains significantly high as 50% [14]. Managements of GIO include conservative treatment, endoscopic treatment, surgical treatment and so on. No matter which kind of treatment is used, time is of great significance especially for saving the fetal life. According to studies published previously, the median length of time from admission to surgery was 48 hours or even longer[3,15]. However, for our patient, fetal death and sigmoid perforation happened within 12 hours after admission and 48 h was obviously not enough. It could be drawn from the treatment process of this case that for patients with GIO complicated with infection, shortening the time from admission to diagnosis, aggressive operation strategy and prophylaxis of infection as well as shock were of critical importance [3].

Although fortunately the patient survived the emergency, what would happen in her next gestation remains uncertain. Due to the fact that the underlying adenomyosis of the posterior uterine wall was unable to be solved, risk of rupture of uterus remained high for her next pregnancy in spite of removal of the compressed bowels this time. Therefore, it was recommended to put handling of adenomyosis in the first place and set up close observation during her next gestation to ensure the safety of both the mother and the fetus.

7. Conclusions

We report the first case of a patient with gestational sigmoid colon obstruction caused by compression and adenomyosis. The adenomyosis results in significant thickening of the posterior uterine wall which compresses the sigmoid colon and causes adhesion and obstruction. The patient recovers well after the surgery but the fetus dies. For pregnant patients with intestinal obstruction complicating enterogenic infection, an aggressive surgical therapy may result in better prognosis and avoid fetal death.

Informed Consent Statement

Informed consent was obtained from the patient for publication of this report and any accompanying images.

Conflict-of-interest Statement

The authors declare that they have no conflict of interest.

CARE Checklist (2016) Statement

The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

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Correlation Analysis between Bacterial Drug Resistance Rate and Antimicrobial Use

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Abstract: Objective: To investigate the drug resistance rate of Acinetobacter baumannii and Klebsiella pneumoniae and carbapenem antibiotics in hospitalized patients in our hospital. **Methods:** The drug resistance rate of Acinetobacter baumannii and Klebsiella pneumoniae and the use of carbapenems in hospitalized patients in our hospital from January to September 2021 were studied (DDDs) were analyzed retrospectively, and the data were analyzed by Pearson correlation method. **Results:** The drug resistance rate of Acinetobacter baumannii to meropenem and biapenem in our hospital did not show significant correlation with their DDDs. The drug resistance rate of Klebsiella pneumoniae was also not significantly correlated with meropenem and biapenem DDDs. **Conclusions:** Acinetobacter baumannii was not found. The drug resistance rate of Klebsiella pneumoniae is related to the use of carbapenems. Our hospital should continue to control the application of drugs and delay the distribution and expansion of drug-resistant bacteria.

Keywords: Klebsiella pneumoniae; Acinetobacter baumannii; Carbapenems; Drug resistance rate; Correlation

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1. Introduction

Gram-negative bacteria are very common in patients with clinical infection. The 2019 report of the national bacterial drug resistance monitoring network shows that the isolation proportion of Gram-negative bacteria far exceeds that of Gram-positive bacteria in major regions of China, with a proportion as high as 70% [1]. Klebsiella pneumoniae opportunistic pathogens generally do not cause disease, and there is a possibility of infection in hospitalized patients. It is also a G-. The most common infection site is the respiratory tract, which can lead to severe pneumonia. Occasionally, it can invade the urinary system and biliary system to cause infection. In severe cases, it can also cause septicemia and other fatal conditions. Acinetobacter baumannii is an important branch of the common flora causing ventilator-associated pneumonia, and it can also be seen in blood flow infection, urinary system and wound infection [2]. In recent years,the drug resistance rate and distribution of drug-resistant bacteria of Pseudomonas aeruginosa, Klebsiella pneumoniae and Acinetobacter baumannii are not optimistic. And the treatment of these common gram-negative pathogens has become more and more difficult because of the rise of their drug resistance rate. In the defense line of antibiotics against bacteria, carbapenem antibiotics have always been effective and adhered to the great antibacterial wall. Improper use may lead to the increase of drug-resistant bacteria in hospitals, and the treatment of drug-resistant bacteria also increases the difficulty of the treatment of clinical infection [3].

In order to understand the use of carbapenems in patients in the Second Affiliated Hospital of Bengbu Medical College and the resistance of Acinetobacter baumannii and Klebsiella pneumoniae to carbapenems, this study is based on the cases treated with carbapenems in our hospital in the first three quarters of 2021. The rationality of drug use was analyzed and its possible correlation with the use of carbapenem antibiotics was discussed, so as to provide guidance for clinical use, in order to standardize clinical rational drug use.

2. Data and Methods

2.1 Data Sources

The antimicrobial susceptibility test results of Acinetobacter baumannii and Klebsiella pneumoniae were

collected from the laboratory department of our hospital from January to September 2021. Obtain the usage (DDDs) of carbapenem antibiotics (meropenem and biapenem) from the his system of our hospital from January to September 2021.

2.2 Method

2.2.1 Analysis on the Use of Antibiotics

Using the defined daily dose (DDD) method recommended by the World Health Organization, the medication frequency of the drug was calculated based on the defined daily dose of each variety. DDD value is calculated with reference to Chinese Pharmacopoeia (2015 Edition) [4], newly compiled Pharmacology (17th Edition) [5] and drug instructions. The consumption of drugs is divided by the corresponding DDD value to obtain the use of antibiotics (DDDs). The DDDs value reflects the frequency of the drug.

2.2.2 Correlation Analysis

Use spss23 0 software for correlation statistical analysis. The Pearson correlation coefficient r between bacterial drug resistance rate and DDDs was calculated. The statistical test of correlation coefficient r showed that $P<0.05$ showed that the correlation had a significant linear relationship [6,7].

3. Results

3.1 Drug Resistance Rate of Therapeutic Bacteria and Usage of Carbapenem Antibiotics

The drug resistance rates of Acinetobacter baumannii and Klebsiella pneumoniae are shown in Tables 1 and 2. Carbapenem antibiotics DDDs are shown in Table 3.

3.2 Correlation between Drug Resistance Rate and DDDs of Antibiotics

According to the Pearson correlation analysis results shown in Table 4, there is no significant correlation between the resistance rate of Acinetobacter baumannii to meropenem and meropenem DDDs by regression analysis ($P>0.05$), which proves that there is no significant correlation at the confidence level of $a=0.05$. The regression analysis between the drug resistance rate of Acinetobacter baumannii compared with apenem and its DDDs was $p>0.05$. The results showed that there was no significant correlation between the drug resistance rate of Acinetobacter baumannii compared with apenem and DDDs. Similarly, there was no significant correlation between the drug resistance rate of Klebsiella pneumoniae to meropenem and biapenem and the DDDs of meropenem and biapenem.

Table 1. Drug resistance rate of Acinetobacter baumannii

Drug name	Drug resistance rate of Acinetobacter baumannii								
	January	February	March	April	May	June	July	August	September
Meropenem	76.2	86	97.14	97	95.45	96.8	76.9	54.55	92.30
Biapenem	76.2	86	97.14	97	95.45	96.8	76.9	54.55	92.30

Table 2. Drug resistance rate of Klebsiella pneumoniae

Drug name	Drug resistance rate of Klebsiella pneumoniae								
	January	February	March	April	May	June	July	August	September
Meropenem	56.5	62.3	59.63	52.15	55.26	69.6	51.3	31.43	45.03
Biapenem	56.5	62.3	59.63	52.15	55.26	69.6	51.3	31.43	45.03

Table 3. Carbapenem antibiotics DDDs

Drug name	DDDs								
	January	February	March	April	May	June	July	August	September
Meropenem	77.00	144.17	127.67	253.17	305.17	295.00	208.50	232.83	176.67
Biapenem	318.00	237.00	273.50	320.25	295.00	256.75	232.50	259.50	260.25

Table 4. Correlation between the change of drug resistance rate of Acinetobacter baumannii and Klebsiella pneumoniae and carbapenem DDDs

Drug resistance rate	Meropenem	Biapenem
Drug resistance rate of Acinetobacter baumannii	r=0.196 *P*=0.613	r=0.224 *P*=0.563
Drug resistance rate of Klebsiella pneumoniae	r=-0.031 *P*=0.937	r=0.011 *P*=0.978

4. Discussion

In recent years, the problem of bacterial drug resistance is no longer a small-scale accidental situation. With the continuous expansion of the distribution range of drug-resistant bacteria, the increasing number of drug-resistant varieties, and the emergence of multi drug-resistant bacteria, it is directly related to the health of every medical worker's patient. The increase of bacterial drug resistance is not only the problem of detection cost and drug cost, but also the problem of drug selection and drug efficacy. After all, the number of drugs is limited, and the variation of bacteria may be unlimited. In recent years, bacteria are more and more resistant to new drugs had been discovered by researchers, which not only increases the pressure of scientific research, but also makes the clinical drug use more and more difficult. Through the comparative study of the drug resistance level of bacteria and the dosage of antibiotics, it is found that there is a macro quantitative relationship between them to a certain extent [8]. The increased selection pressure caused by blindly using antibiotics does not always increase the treatment effect, but leads to the corresponding increase of drug-resistant strains to a certain extent.

Carbapenem antibiotics, as a veteran of the antibacterial industry, "special use level" is not only the affirmation of its effect, but also represents the respect and recognition of this effective old drug. In the battle against multidrug-resistant bacteria, as long as this line of defense is still in place, it will stabilize the hearts of all clinical anti infection workers. The analysis results show that meropenem is more used than apenem. There was no significant correlation between the drug resistance rate of Klebsiella pneumoniae and meropenem and biapenem DDDs. The drug resistance mechanism of Klebsiella pneumoniae has been basically understood through the research of several generations. It can produce a special plasmid mediated enzyme, which has the function of hydrolyzing carbapenems, and has a powerful function, which can make almost allβ-Inactivation of lactamases and carbapenems [9]. When the bacterial culture indicates that it produces ultra broad spectrumβ-Lactamase can be used in the treatment of Klebsiella pneumoniae. Acinetobacter baumannii is common in hospitalized patients infected in our hospital. At present, the commonly used drugs for Acinetobacter baumannii infection in clinic are carbapenems or compound drugs of lactamase inhibitors. In this investigation on the drug resistance rate of Acinetobacter baumannii to meropenem, it was found that there was no significant correlation between the infection rate and the use of meropenem, which also showed that our hospital had a good grasp of the use of carbapenem antibiotics.

Bacterial drug resistance is caused by many internal and external factors, such as the kinetic characteristics of the drug itself, the action mechanism of sterilization, the antibacterial activity of the drug and so on. At the same time, the management mode of clinical drug use, the intensity and mode of drug use, drug dosage and so on also affect the production of bacterial drug resistance to a certain extent. Therefore, when selecting drugs, we should strictly control the indications, minimize empirical drugs, and protect this effective antibacterial weapon while using it well. The number of samples in this study is very limited, and the types of basic diseases, nutritional status and compliance of patients can affect the treatment effect to varying degrees. Therefore, clinical pharmacists should also give full play to their advantages, fully learn and master the professional knowledge of pharmacy, and understand the drug instructions and relevant diagnosis and treatment guidelines in detail. It is particularly important to correctly grasp the dose, course of treatment and administration method.

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Formulation Screening of Levetiracetam Sustained Release Tablets

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Abstract: Objective: To prepare the sustained-release preparation of levetiracetam. **Methods:** The sustained-release materials were selected for wet granulation and tablet pressing, and the best formula was determined. Levetiracetam sustained-release tablets were prepared and the influencing factors were investigated. **Results and Conclusions:** The formulation was reasonable, the preparation process was simple, and the quality was stable.

Keywords: Levetiracetam; Sustained release tablets; Release; Stability

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1. Introduction

Levetiracetam, developed by Belgium's UCB company, is a new antiepileptic drug. It was named "Keppra" in April 2000® Approved by FDA and listed in the United States and the European Union. Levetiracetam sustained release tablets (trade name:Keppra XR)® [1] approved by FDA in February 2009. Levetiracetam is mainly used in the treatment of partial seizures in adults and children over 4 years old. It is a new antiepileptic drug used most in the treatment of epilepsy. Levetiracetam sustained-release tablets have the advantages of less medication times (once a day), convenient clinical medication,stable blood concentration and low toxic and side effects. It is the preferred dosage form for the clinical application of levetiracetam.

Refer to levetiracetam sustained release tablets [2] (trade name: Keppra XR) of UCB (youshibi) Company in Belgium®. To prepare levetiracetam sustained-release tablets [3] and investigate the influencing factors. The results are summarized as follows:

2. Raw and Auxiliary Materials and Instruments and Equipment

Levetiracetam (Shandong Ruihe Pharmaceutical Technology Co., Ltd.), hydroxypropyl methylcellulose (Dow Chemical Co., Ltd.), wet mixing granulator (Beijing Institute of Aeronautical Technology), rotary tablet press, high-efficiency coating machine (Shanghai Tianhe Pharmaceutical Machinery Factory), gas chromatograph, drug dissolution tester and high-performance liquid chromatograph (Shimadzu).

3. Methods and Results

3.1 Prescription Screening and Preparation Process

According to the formulation of the original preparation and the level of key quality attributes as the research and development objectives of the self-developed products, referring to the types of excipients used in the original levetiracetam sustained-release tablets (Keppra XR), the dosage of each excipient is based on ensuring that the particles have good fluidity, the plain tablets have low brittleness, and the tablet release behavior is consistent with that of the original product.

Because the main drug content in the prescription of this product is high, about 70%, and the compressibility of the main drug is poor, but because the main drug has good wet and thermal stability, it is decided to prepare this product by wet granulation process to improve the compressibility of the material.

According to the original formulation and the compatibility test results of raw and auxiliary materials, hydroxypropyl methylcellulose is selected as the slow-release material, polyethylene glycol 6000 as the adhesive, silica as the flow aid,magnesium stearate as the lubricant and stomach soluble film coating premix as the coating material.

Test results of different prescriptions are as follows:

Prescription 4 is the most consistent with the release behavior of the original preparation, so the hydroxypropyl methylcellulose of model K15M is determined as the sustained-release material of this product, and the dosage of hydroxypropyl methylcellulose is determined to be about 160 mg/tablet. The dosage of polyethylene glycol 6000 is 2%. The release curves of formula 4 and the original preparation in four release media were further determined and compared.

It can be seen from the determination results that the similarity factor F2 of formula 4 and the original preparation in the four release media is greater than 50, and the release behavior is consistent. Therefore, formula 4 is determined as the best formula.

Table 1. proportion of raw and auxiliary materials of different prescriptions (100 Tablets, g)

Raw and auxiliary materials		Prescription 1	Prescription 2	Prescription 3	Prescription 4	Prescription 5
Levetiracetam		50.0	50.0	50.0	50.0	50.0
Hydroxypropyl methylcellulose (K4M)		18.0	—	—	—	—
Hydroxypropyl methylcellulose (K15M)		—	18.0	—	18.0	18.0
Hydroxypropyl methylcellulose (K100M)		—	—	18.0	—	—
80%ethanol		31.4	30.5	30.4	32.1	31.2
Polyethylene glycol6000		0.8	0.8	0.8	1.4	2.1
Magnesium stearate		0.6	0.6	0.6	0.6	0.6
Silicon dioxide		0.6	0.6	0.6	0.6	0.6
Gastric soluble film coating premix		2.0	1.9	2.0	2.0	2.0
Detection index	Angle of repose (°)	34.7	33.4	34.6	33.7	34.2
	Brittleness (%)	0.45	0.42	0.53	0.23	0.10

Table 2. Comparison of each prescription and the original preparation at pH 6 Comparison of release results in 0 phosphate buffer

Time(h)	1	2	8	f_2
Prescription 1 (%)	35.9	52.3	93.9	82.0
Prescription 2 (%)	34.9	49.6	89.2	67.8
Prescription 3 (%)	33.0	47.1	86.9	61.0
Prescription 4 (%)	33.9	50.6	96.2	99.2
Prescription 5 (%)	32.9	48.8	89.5	68.2
Original preparation (%)	33.7	51.0	96.4	—

Table 3. comparison results of release curve between prescription 4 and the original preparation

	Time(hr)	1	2	4	6	8	12	f_2
pH6.0Phosphate buffer	Prescription 4 (%)	33.8	51.0	71.8	86.0	94.3	99.0	84.3
	Original preparation (%)	33.7	51.0	74.4	88.5	96.4	100.2	
Water	Prescription 4 (%)	34.7	50.0	72.5	83.9	93.7	98.2	85.4
	Original preparation (%)	32.5	49.0	70.7	85.4	93.3	98.7	
0.1mol/l hydrochloric acid solution	Prescription 4 (%)	34.7	51.7	73.6	87.5	96.2	99.1	90.7
	Original preparation (%)	33.2	50.0	73.4	87.0	94.1	99.9	
pH4. 5 acetate buffer	Prescription 4 (%)	32.2	49.3	72.1	84.3	93.1	98.9	84.6
	Original preparation (%)	32.7	49.2	70.9	87.6	94.9	102.9	

3.2 Sample Preparation: Produce 1000 Samples in One Batch According to the Determined Prescription 4

Weigh the prescription amount of levetiracetam and hydroxypropyl methylcellulose into the wet mixing granulator for dry mixing. After dry mixing, add 80% ethanol to make soft material. The prepared soft material is granulated with 20 mesh screen of swing granulator, and the wet particles are dried with blast at 55~65 ºC. The moisture control range of dry particles is 2.0%~4.0%. The dry particles are granulated through 20 mesh screen of swing granulator. Add the prescribed amount of magnesium stearate, silicon dioxide and polyethylene glycol 6000 into the whole dry particle, mix evenly, convert the standard tablet weight according to the intermediate content, press, coat and test.

3.3 Analysis and Detection of Levetiracetam Sustained Release Tablets

According to the Chinese Pharmacopoeia and the quality standard of levetiracetam sustained-release tablets [4], determination: 1) properties: it is a white film coated tablet, which appears white or almost white after removing the coating; 2) Hardness: 12-18 kg; 3) Brittleness: <0.5%; 4) Weight difference: meet the requirements.

Determination of related substances in levetiracetam sustained release tablets: calculated according to the impurity reference method: impurity B shall be≤0.2%, the peak area of other single unknown impurities shall not be greater than the peak area of levetiracetam in the reference solution (0.06%), and the total impurities shall be≤0.5%. Test results: impurity B is not detected, the maximum single impurity is 0.02%, and the total impurity is 0.1%.

Determination of release rate of levetiracetam sustained release tablets: the release amount of each tablet in 1 hour, 2 hours and 8 hours should be 21%~40%, 41%~60% and more than 80% of the marked amount respectively. The test results of samples were 35%, 53% and 93%.

Determination of levetiracetam R-isomer: not more than 0.5%. The test result of the sample is 0.0013%.

Determination of levetiracetam sustained release tablets [5]: The content of levetiracetam ($C_8H_{14}N_2O_2$) should be 95.0%~105.0% of the marked amount. The determination result of the sample is 99.5%.

3.4 Investigation of Influencing Factors

Placement conditions: high humidity rh92.5%, high temperature 60 ºC, light 4500lx±500lx. Investigation time: 5 days, 10 days and 30 days. Investigation items: properties, related substances, levetiracetam R-isomer, release degree and content. Results: the impurity B in the bare sample increased from 0.001% to 0.010%, with an increase of 0.009% during the investigation of levetiracetam sustained-release tablets at 60 ºC. The other largest single miscellaneous increased from 0.013% to 0.198%, with an increase of 0.185%, and the total miscellaneous increased from 0.024% to 0.279%, with an increase of 0.255%. There is no obvious change in the impurity level of the sample after packaging. Under the condition of high humidity, except for obvious moisture absorption and weight gain, other quality indexes of bare lofting products have no obvious change. There was no significant change in each quality index under light conditions.

4. Discussion

The formulation uses hydroxypropyl methylcellulose K15M as sustained-release material and polyethylene glycol 6000 as adhesive to jointly control the release rate of the drug. The properties, hardness, brittleness, weight difference, release, content and related substances of the prepared tablets are qualified. The investigation and research results of influencing factors show that the product quality is stable. It shows that nimesulide sustained-release tablets prepared according to this prescription and process have strong operability and controllable quality.

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Evaluation of the Clinical Efficacy and Safety of Gongyanping Capsule Combined with Tinidazole Tablets in the Treatment of Patients with Acute Cervicitis

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Abstract: Objective: To study the therapeutic effect of Gongyanping capsule+tinidazole tablets in patients with acute cervicitis. **Methods:** Data were collected from 84 patients with acute cervicitis admitted to our hospital from January 2020 to October 2020. The "double-blind method" was divided into reference group (tinidazole tablets, n=42) and combination group (tinidazole). Azole tablets + Gongyanping capsule, n=42), compare the effectiveness of the two groups. **Results:** There was no difference in immune function before medication, and there was no difference in adverse reactions between the two groups after medication, P>0.05; after medication, compared with the reference group, the combination group had higher IgA, IgG, IgM indicators; the combination group had higher effective rates (95.24%) was higher than the reference group (76.19%), x^2=4.7639, p=0.0290, P<0.05. **Conclusions:** Combination therapy for acute cervicitis can improve the efficacy, is safe and reliable, and is worthy of praise.

Keywords: Gongyanping capsules; Tinidazole tablets; Acute cervicitis; Clinical efficacy; Safety

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1. Introduction

The common clinical obstetrics and gynecology disease is acute cervicitis. The patient becomes ill due to inflammation after cervical infection with pathogens. With the help of B-ultrasound, the cervix is in the state of congestion and edema, and the vaginal mucosa is congested and edema, attached to purulent secretions, and secreted. The substance flows out through the cervical canal, increasing the risk of bleeding. According to epidemiology [1], the prevalence rate of this disease in gynecology is as high as 50%. The analysis of the pathogenic factors is not clear. It may be related to factors such as repeated vaginal infections, early sexual life and increased number of induced abortions. The symptoms of vulvar pain, purulent leucorrhea, dysuria, and bleeding during sexual intercourse will worsen and affect women's physical and mental health. Therefore, how to use drugs correctly as soon as possible has become an urgent point in the field of gynecology. Zheng Lin [2] confirmed that tinidazole tablets can improve the efficacy of treating this disease. It can exert anti-inflammatory mechanism, inhibit anaerobic infection, enhance antibacterial activity, and relieve discomfort, but the effect of simple medication is not good, and the side effects can also restore the disease. It brings troubles and affects the prognosis of patients. In view of this, this article selects 84 patients with acute cervicitis admitted to our hospital from January 2020 to October 2020 as the research object, and analyzes the value of symptomatic medication for patients with acute cervicitis.

2. Materials and Methods

2.1 Baseline Data

A retrospective study, sample collection in our hospital from January 2020 to October 2020 admitted 84 patients with acute cervicitis, combination group (42 cases): age 22-52 years old, mean (36.34±0.58) years old; course of disease 1-15d, mean value (7.51±1.23)d; of which 24 were unmarried and 18 were married; types of infection: 11 cases of mycoplasma infection, 9 cases of chlamydia infection, 13 cases of gonococcal infection, 9 cases of mixed infection; reference group (42 cases): age 24-55 years old, mean (36.56±0.61) years old; course of disease 2-17d, mean (7.64±1.38)d; 22 cases were unmarried, 20 cases were married; type of infection: 12 cases of mycoplasma infection, 10 cases of chlamydia infection. There were 8 cases of gonococcal infection and 12 cases of mixed infection, P>0.05, comparable. The patient signed

the "Informed Consent" and was approved by the ethics committee.

[Inclusion criteria] 1) Diagnosed by colposcopy [3]; 2) Normal menstruation, history of sexual life; 3) Showing vulvar pain, dysuria, and purulent leucorrhea; 4) The course of disease>1d, age>18 years old; 5) Complete data.

[Exclusion criteria] 1) Organ failure; 2) Vaginal bleeding caused by other unknown reasons; 3) Being pregnant or breast-feeding; 4) Medication contraindications; 5) History of mental illness; 6) Withdrawal from the study halfway.

2.2 Method

Reference group: patients take 1g tinidazole tablets (manufacturer: Hubei Hengan Pharmaceutical Co., Ltd., National Medicine Zhunzi H20063292, specification 0.5g*8 tablets), once a day, continuous medication for 1 month, adjusted according to the degree of disease recovery Dosage of medication.

Combination group: The dosage and method of tinidazole tablets are the same as those in the reference group, combined with a single oral administration of 2 Gongyanping capsules (manufacturer: Jiangxi Minji Pharmaceutical Co., Ltd., National Medicine Zhunzi Z20060038, specification 0.25g*12 capsules*3 plates), 3 times/d, continuous medication for 1 month, and adjust the dosage according to the degree of disease recovery.

Both groups of treatment are 3 months.

2.3 Observation Indicators

Immune function: Collect 2 groups of fasting venous blood 3mL, centrifuge for testing, ELISA (enzyme-linked immunosorbent) method to detect IgA, IgG, IgM, the kit provided by Sichuan Aobo Company, strictly follow the instructions.

Clinical efficacy: markedly effective: symptoms subsided, gynecological examination cervix surface is smooth, covered with squamous epithelium, pathogenic bacteria results are negative; effective: symptoms are relieved, gynecological examination erosion area is reduced, most pathogenic bacteria results are negative, only one positive number; Ineffective: worsening of the condition [4] and effective rate.

Adverse reactions: record the number of cases of vomiting, diarrhea, dizziness and headache.

2.4 Statistical Methods

The data were sorted by Excel table, analyzed by SPSS22.0 statistical software, and the mean±standard deviation (±s) of measurement data was expressed by t test. Counting data composition ratio [n(%)] said, x2 test. Inspection level P=0.05.

3. Results

3.1 Immune Function

There was no difference in immune function before medication, P>0.05; after medication, compared with the reference group, the IgA, IgG, IgM indexes of the combination group were higher, P<0.05. See Table 1.

Table 1. Comparison of immune function (±s, g/L)

Group		Combination group (n=42)	Reference group (n=42)	*t*	*p*
IgA	Before medication	2.42±0.62	2.45±0.29	0.2840	0.7771
	After medication	2.98±0.74*#	2.58±0.21*	3.3700	*P*<0.05
t	--	3.7592	2.3530	--	--
p	--	*P*<0.05	*P*<0.05	--	--
IgG	Before medication	9.62±0.83	9.61±0.84	0.0548	0.9564
	After medication	12.48±1.35*#	10.25±1.49*	7.1878	*P*<0.05
t	--	11.6958	2.4248	--	--
p	--	*P*<0.05	*P*<0.05	--	--
IgM	Before medication	0.91±0.12	0.92±0.14	0.3514	0.7261
	After medication	1.29±0.21*#	1.04±0.18*	5.8577	*P*<0.05
t	--	10.1819	3.4103	--	--
p	--	*P*<0.05	*P*<0.05	--	--

Note: Comparison within groups, *P<0.05; Comparison between groups, #P<0.05.

3.2 Clinical Efficacy

Compared with the reference group, the combination group has a higher effective rate, P<0.05. See Table 2.

Table 2. Comparison of clinical efficacy [(n),%]

Group	Markedly effective	efficient	invalid	Efficient
Combination group (n=42)	25(59.52)	15(35.71)	2(4.76)	40(95.24%)
Reference group (n=42)	20(47.62)	12(28.57)	10(23.81)	32(76.19%)
x^2	--	--	--	4.7639
p	--	--	--	0.0290

3.3 Adverse Reactions

There was no difference in the proportion of adverse

reactions between the two groups, P>0.05. See Table 3.

Table 3. Comparison of adverse reactions [(n),%]

Group	Vomit	diarrhea	Dizziness and headache	Incidence
Combination group (n=42)	2 (4.76)	0 (0.00)	1 (2.38)	3 (7.14%)
Reference group (n=42)	1 (2.38)	2 (4.76)	1 (2.38)	4 (9.52%)
x^2	--	--	--	0.1558
p	--	--	--	0.6930

4. Discussion

Acute cervicitis is a common gynecological disease. The body is infected with different pathogens. Bacteria such as mold, Trichomonas vaginalis and Neisseria gonorrhoeae are common pathogens. The pathological feature is that the columnar epithelium in the cervical epidermis covers the original squamous epithelium, which is diseased. Features such as high rate and poor prognosis. The cause of the analysis is unknown. It may be related to the increase in the number of abortions, frequent sexual life, and repeated vaginitis. Symptoms such as purulent leucorrhea and dysuria after the illness are likely to occur if they are not treated in time. Chronic cervicitis and cervical cancer threaten the physical and mental health of patients, so early correct medication is paid attention to by gynecology.

It has been reported in the literature [5] that tinidazole + Gongyanping capsules can improve the curative effect of this disease. The analysis found that: 1) The former is a nitroimidazole derivative, which can inhibit the synthesis of anaerobic bacteria's DNA by oral administration. Inhibit the growth and reproduction of pathogenic microorganisms, promote the death of pathogenic microorganisms, and inhibit the synthesis of pathogen DNA, quickly reach the focus of the disease, and enhance the antibacterial effect. However, long-term simple drug use can easily cause side effects and affect the outcome of the disease, and its clinical application is limited.

2) Chinese medicine shows that acute cervicitis belongs to the categories of "suppression" and "abdominal pain". The pathogenesis is caused by women's menstrual period, damp-heat and pathogenic qi deficiency, and normal physical weakness. Heat damages qi and yin and causes poor blood flow and heat damages body fluid. The color is yellow, the blood stasis is difficult to remove, which causes depression and heat, and the damp evil obstruction causes the patient to have abdominal distension and eventually blood stasis. Therefore, follow the treatment of removing blood stasis and promoting qi, clearing heat and dampness, astringent stop, expectorant and pain relief principles can improve the effect of disease treatment.

Gongyanping Capsule is a common Chinese medicine preparation. The ingredients involved are liangmianzhen, angelica, diren, five-finger hair peach, and piercing stone. Among them, liangmianzhen has the effects of dispelling dampness and relieving pain, promoting qi and promoting blood circulation. Angelica has the functions of regulating menstruation and relieving pain and nourishing blood Invigorating blood, Diren has the effects of detoxification and swelling, removing blood stasis and removing dampness, piercing the stone has the effects of dispelling blood stasis and relieving pain, clearing heat and dampness, five-finger hair peach has the effects of promoting qi, replenishing dampness, replenishing qi and strengthening the spleen. It has the effect of removing blood stasis, relieving pain, and astringent stop band.

Modern pharmacology shows that Gongyanping Capsule inhibits hemolytic streptococcus and staphylococcus, protects women's reproductive health, enhances the antibacterial effect, promotes skin cell differentiation and proliferation, improves the microcirculation mechanism, and promotes disease recovery. It has practical value.

This study shows that: 1) Compared with the reference group, the combination group has higher IgA, IgG, and IgM indicators, P<0.05, indicating that the two medications can complement each other, promote immune recovery, enhance the medication mechanism, and have a positive significance in achieving long-term efficacy 2) Compared with the reference group, the combination group has a higher effective rate, P<0.05, indicating that the two groups can take advantage of their respective advantages, enhance the efficacy of the medication, and promote the early recovery of the disease; 3) There is no difference in the proportion of adverse reactions between the two groups, P>0.05 , Which shows that this article is similar to Cai Yaqing [6] literature, so the two drugs can play a synergistic auxiliary effect to ensure the safety and rationality of the medication, and the effect is ideal.

In summary, Gongyanping Capsule + Tinidazole Tablets for patients with acute cervicitis can improve immune function, enhance the effect of medication, and ensure the safety of medication and the definite curative effect.

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Effect Analysis of Jinsang Sanjie Pill Combined with Microwave Physiotherapy in the Treatment of Chronic Laryngitis

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Abstract: Objective: To evaluate the effect of Jinsang Sanjie pill combined with microwave physiotherapy on patients with chronic laryngitis. **Methods:** 150 patients with chronic laryngitis in the outpatient department of Otorhinolaryngology of Zhongshan Nanlang Hospital from January 2019 to January 2021 were selected and randomly divided into two groups, 75 cases in each group. The control group was treated with microwave physiotherapy, and the observation group was treated with Jinsang Sanjie pill combined with microwave physiotherapy. **Results:** The total effective rate of the observation group (98.67%) was higher than that of the control group ($P < 0.05$). The whole blood high shear viscosity (3.25 ± 0.23) MPa·s, whole blood low shear viscosity (6.33 ± 0.45) MPa·s, plasma viscosity (1.50 ± 0.25) MPa·s and erythrocyte sedimentation rate (15.39 ± 3.46) mm/h in the observation group were lower than those in the control group, with statistical significance ($P < 0.05$). The longest pronunciation time (19.88 ± 6.39) s and dysphonia index (1.95 ± 1.42) of the observation group were higher than those of the control group, and the fundamental frequency perturbation (0.32 ± 0.05)%, amplitude perturbation (1.33 ± 0.12)%, and noise to harmonic ratio (0.11 ± 0.03)% of the observation group were lower than those of the control group, with statistical significance ($P < 0.05$). **Conclusions:** The curative effect of Jinsang Sanjie pill combined with microwave physiotherapy is accurate for patients with chronic laryngitis, which is worthy of promotion.

Keywords: Chronic laryngitis; Jinsang Sanjie pill; Microwave physiotherapy; Hemorheology index; Voice acoustic analysis test

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1. Introduction

Chronic laryngitis (CL) belongs to the inflammation of larynx. It is a common disease in otolaryngology. The disease is an important factor leading to hoarseness. The high incidence group of chronic laryngitis is teachers, singers, salesmen, etc. The common symptoms of the disease are dry throat, hoarseness, etc. [1,2]. In order to evaluate the effect of Jinsang Sanjie pill combined with microwave physiotherapy in the treatment of chronic laryngitis, 150 patients with chronic laryngitis in our hospital were selected for this study.

2. Materials and Methods

2.1 Baseline Information

150 patients with chronic laryngitis in the outpatient department of Otorhinolaryngology were selected. The patients were treated from January 2019 to January 2021. They were randomly divided into control group and observation group. The control group (75 cases) was treated with microwave physiotherapy, and the observation group (75 cases) was treated with Jinsang Sanjie pill combined with microwave physiotherapy. In the control group, there were 40 female patients and 35 male patients; the average age was (46.32 ± 6.32) years old; the course of disease ranged from 6 months to 11 years, with an average of (4.28 ± 1.33) years. In the observation group, there were 38 female patients and 37 male patients; the average age was (46.58 ± 6.28) years old; the course of disease ranged from 8 months to 10 years, with an average of (4.55 ± 1.29) years. There was no significant difference between

the two groups (P > 0.05).

Inclusive criteria: (1) The duration of disease was more than 2 months; (2) All patients had hoarseness, dry throat and pain; (3) The patient's data were complete.

Exclusion criteria: (1) Patients with allergic constitution; (2) Patients with mental diseases; (3) Patients with severe cerebrovascular disease.

2.2 Method

In the control group, patients were treated with microwave physiotherapy intervention, using microwave therapeutic instrument (manufacturer: Nanjing Yigao Microwave System Co., Ltd., model: eco-100), adjusting the frequency to 2450MHz, adjusting the power to 15W ~ 20W. The treatment time was 10 minutes.

The observation group was treated with Jinsang Sanjie pills (manufacturer: Manufacturer: Xi'an Beilin Pharmaceutical Co., Ltd., approval number: z61020024, specification: 0.4g * 18 pills * 1 plate) combined with microwave physiotherapy, take Jinsang Sanjie pills orally, twice a day, 0.8g ~ 1.6g each time.

2.3 Observation Index

(1) The total effective rate of two groups of patients with chronic laryngitis was calculated. Effect evaluation criteria: after treatment, hoarseness and other symptoms disappeared completely, and the sound time was more than 20 seconds; after treatment, hoarseness and other clinical symptoms and signs disappeared, and it was effective when the sound time was more than 15 seconds; patients after treatment did not meet the above conditions for invalid.

(2) The changes of hemorheology indexes of the two groups were calculated, including whole blood high shear viscosity, whole blood low shear viscosity, whole blood reduced viscosity, plasma viscosity, ESR and whole blood reduced viscosity.

(3) The voice acoustic analysis test results of two groups of patients with chronic laryngitis were calculated, and the patients were tested with atmos voice acoustic analysis test software, including the longest pronunciation time, dysphonia index, fundamental frequency perturbation, amplitude perturbation and noise to harmonic ratio.

2.4 Statistical Processing

Spss23.0 statistical software was used to process the data of the two groups of patients with chronic laryngitis. The expression of the total effective rate was (%). The changes of hemorheology indexes and the results of voice acoustic analysis were expressed by (mean ± standard deviation), and the differences were expressed by chi square test and t test. If there is statistical significance, then (P < 0.05).

3. Results

3.1 The Total Effective Rate of Two Groups of Patients with Chronic Laryngitis was Compared

The total effective rate of the observation group was higher than that of the control group (P < 0.05). See Table 1.

3.2 Comparison of Hemorheological Indexes between Two Groups of Patients with Chronic Laryngitis

The whole blood high shear viscosity, whole blood low shear viscosity, plasma viscosity and ESR of the observation group were lower than those of the control group (P < 0.05). See Table 2.

3.3 Comparison of Voice Acoustic Analysis Results of Two Groups of Patients with Chronic Laryngitis

The longest phonation time and dysphonia index of the observation group were higher than those of the control group, and the fundamental frequency perturbation, amplitude perturbation and noise to harmonic ratio of the observation group were lower than those of the control group (P < 0.05). See Table 3.

Table 1. Comparison of total effective rate between groups {n (%)}

Group	Remarkable effect	Effective	Invalid	Total effective rate
Observation group (n = 75)	31 (41.33)	43 (57.33)	1 (1.33)	74 (98.67)
Control group (n = 75)	20 (26.67)	46 (61.33)	9 (12.00)	66 (88.00)
χ^2value	-	-	-	6.8571
P value	-	-	-	0.0088

Table 2. Comparison of hemorheological indexes between groups $\{\bar{x} \pm s\}$

Group	Whole blood high shear viscosity (MPA·s)	Whole blood low shear viscosity (MPA·s)	Whole blood reduced viscosity (MPA·s)	Plasma viscosity (MPA·s)	ESR (mm / h)
Observation group (n = 75)	3.25±0.23	6.33±0.45	7.51±3.26	1.50±0.25	15.39±3.46
Control group (n = 75)	4.12±0.35	7.25±0.55	8.33±3.12	1.60±0.25	20.31±4.48
T value	17.9901	11.2117	1.5737	2.4494	7.5272
P value	0.0000	0.0000	0.1177	0.0155	0.0000

Table 3. Comparison of voice acoustic analysis test results between groups $\{\bar{x} \pm s\}$

Group	Maximum pronunciation time (s)	Dysphonia index	Fundamental frequency perturbation (%)	Amplitude perturbation (%)	Noise to harmonic ratio (%)
Observation group (n = 75)	19.88±6.39	1.95±1.42	0.32±0.05	1.33±0.12	0.11±0.03
Control group (n = 75)	15.33±5.28	1.44±1.63	0.40±0.11	1.41±0.26	0.19±0.05
T value	4.7536	2.0430	5.7338	2.4194	11.0227
P value	0.0000	0.0428	0.0000	0.0168	0.0000

4. Discussion

Chronic laryngitis belongs to the category of "slow laryngitis" in traditional Chinese medicine, which is caused by improper use of vocal cords for a long time. Chronic laryngitis patients with pharyngeal mucosa congestion, tissue hyperplasia, some patients with suppurative problems [3-5]. Microwave physiotherapy is a common treatment method in otorhinolaryngology. When the microwave irradiates the diseased part, the diseased tissue will heat up rapidly. When the temperature of a certain part exceeds a certain threshold, the human body will produce self-protection reaction, that is, strengthening the blood supply to the part, improving the blood circulation conditions of the diseased part, and increasing the nutrition of the diseased part, so as to open up the capillaries blocked by compression, make the blood circulation of this part tend to be normal, and make the inflammation disappear gradually. Microwave itself has the characteristics of sterilization, coupled with the thermal effect of sterilization, so as to achieve the purpose of dredging collaterals and anti-inflammatory [6-9]. Jinsang Sanjie pill is a traditional Chinese medicine preparation, which contains safflower, peach kernel, Fritillaria, Jineijin, honeysuckle, dandelion, Scrophularia, isatis root, Ophiopogon japonicus and other ingredients. Safflower has the effect of promoting blood circulation and removing blood stasis, peach kernel has the effect of removing carbuncle, breaking blood stasis, and improving gastrointestinal function. Ophiopogon japonicus has the effect of moistening dryness, nourishing Yin, moistening lung and promoting body fluid. Combined with Fritillaria can better relieve the cough symptoms of patients. Drugs play the role of removing blood stasis, promoting blood circulation and evacuating internal heat. Modern pharmacology has proved that oral administration of Jinsang Sanjie pillhas no obvious effect on liver and kidney and has high safety. On the basis of microwave physiotherapy combined with Jinsang Sanjie pill can better achieve the effect of detoxification, heat clearing, blood stasis, phlegm and dampness. According to the results of this study, the total effective rate of the observation group was higher than that of the control group, the whole blood high shear viscosity, whole blood low shear viscosity, plasma viscosity and ESR of the observation group were lower than those of the control group, the longest pronunciation time and dysphonia index of the observation group were higher than those of the control group, and the fundamental frequency perturbation, amplitude perturbation and noise harmonic ratio of the observation group were lower than those of the control group, with statistical significance ($P < 0.05$).

To sum up, Jinsang Sanjie pill combined with microwave physiotherapy has a significant effect in the treatment of chronic laryngitis, which has the value of use and promotion.

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Effect of Dahuoluo Capsule Combined with Acupotomy on Improving Upper Limb Electromyography in Patients with Cervical Spondylotic Radiculopathy

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Abstract: Objective: To investigate the effect of Dahuoluo capsule combined with Acupotomy on improving upper limb electromyography in patients with cervical spondylotic radiculopathy. **Methods**: A total of 60 patients with cervical spondylotic radiculopathy in our hospital from January 2019 to June 2020 were selected and divided into two groups according to different treatment methods: control group (n = 30 cases, treated with Acupotomy); the study group (n = 30 cases, treated with Dahuoluo capsule combined with Acupotomy), the changes of F-wave conduction mode of upper limb median nerve and ulnar nerve were compared before and after treatment. **Results:** There was no significant difference in F-wave conduction velocity of median nerve and ulnar nerve between the study group and the control group before treatment (P> 0.05). After treatment, the F-wave conduction velocity of EMG of anterior median nerve and ulnar nerve in the study group was significantly higher than that in the control group (P < 0.05). **Conclusions:** Dahuoluo capsule combined with acupotomy can effectively improve the conduction velocity of median nerve and ulnar nerve in the compressed area, relieve or eliminate the compression state, which can be promoted.

Keywords: Dahuoluo capsule; Needle knife; Cervical spondylotic radiculopathy; Median nerve; Ulnar nerve; Electromyogram

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1. Introduction

Cervical spondylotic radiculopathy often occurs in people who work at their desks for a long time. In recent years, with the increase of people's life pressure, the incidence of cervical spondylotic radiculopathy is further increased, showing a trend of younger onset. The symptoms of nerve root are related to the formation of osteophyte at the posterior margin of vertebral body, protrusion and prolapse of nucleus pulposus, hypertrophy of posterior longitudinal ligament, hyperplasia of posterior facet joint and nerve adhesion. If the above signs are not corrected in time, it will lead to neck and shoulder pain, upper limb numbness and other symptoms, which will seriously affect the daily life of patients. Acupotomy is a common treatment for this disease, which has a significant effect in releasing soft tissue adhesion, but it fails to achieve the expected clinical purpose. Dahuoluo capsule is composed of frankincense, angelica, Atractylodes macrocephala and red ginseng. It has the function of relaxing meridians and activating collaterals, and can be used in the treatment of cervical spondylosis. In this regard, this study, on the basis of acupotomy treatment, combined with Dahuoluo capsule treatment, discusses its curative effect on relieving the clinical symptoms of patients with cervical spondylotic radiculopathy [1].

2. Object and Method

2.1 Object Information

A total of 60 patients with cervical spondylotic radiculopathy in our hospital from January 2019 to June 2020 were selected and divided into control group (n = 30, treated with Dahuoluo capsule) according to different treatment methods, including 18 males and 12 females. The mean age was (52.35 ± 10.27) years (range, 21-75 years); the course of disease ranged from 0.5 to 10 years,

with an average of (3.92 ± 1.68) years. There were 19 males and 11 females in the study group (n = 30). The mean age was (52.36 ± 10.26) years (range, 20-74 years); the course of disease was 0.5-10 years, with an average of (3.75 ± 1.74) years. The data of gender distribution, age and course of disease in different groups were compared (P > 0.05), which suggested that statistical analysis could be carried out later. **Inclusion criteria:** The subjects met the diagnostic criteria of cervical spondylosis in the diagnostic criteria of TCM syndromes. Sufficient imaging data can be provided. They were 18-75 years old, informed of the study and signed informed consent. **Exclusion criteria:** Subjects did not tolerate the drug used in this study. Cervical spine with osteoporosis, osteoarthrosis, tumor, fracture and dislocation. Those who do not tolerate acupuncture therapy. Severe neurosis was found. Patients with severe heart, liver, kidney, body and coagulation disorders. Those who failed to participate in the whole study [2].

2.2 Method

2.2.1 Control Group

30 patients in the control group were treated with Acupotomy. Three sites were selected: C4-C7 posterior capsule, nape ligament and vertebral occipital muscle. The specific operation methods are as follows: guide the patient to prone position, pad a soft pillow under the chest to fully expose the neck and shoulder. Accurate positioning of the above three sites, and the application of iodophor routine disinfection, can carry out the needle knife release treatment. After wearing sterile gloves, the operator laid a sterile towel and applied 1% lidocaine for local anesthesia. After the anesthetic effect was achieved, the operation could be carried out according to the four step process of needle knife closed operation. When the needle knife is put in, in order to achieve the best loosening effect, the needle knife can be put in parallel along the muscle fiber, blood vessel and knife edge line. When releasing the joint capsule, the knife edge line is parallel to the longitudinal axis of the human body. Release the joint capsule first, release the muscle fascia, and control the puncture to the bone surface at an angle of 45 degrees. Then 2-3 scalpels were removed along the articular surface. After treatment, the band aid was applied. When the insertion of the vertebral occipital muscle and the nuchal ligament is released, the needle knife is 45° to the sagittal axis of the human body and 45° to the foot side. The knife edge line is parallel to the longitudinal axis of the human body and perpendicular to the occipital bone.

Once a week for 3 weeks.

2.2.2 Research Group

On the basis of the control group, 30 patients in the study group took Dahuoluo capsule (Jiangxi Yaodu Zhangshu Pharmaceutical Co., Ltd; Approval number: z19990044; 25g/capsule). Take 1.0g once, 3 times a day, warm water after meal. The efficacy was compared after 3 weeks.

2.3 Observation Index

The changes of F-wave conduction velocity of median nerve and ulnar nerve were compared between the two groups. The above indexes were measured by electromyography (meb-7102k, provided by Japan photoelectric company) before treatment, and the F-wave conduction velocity of ulnar nerve wrist median nerve was calculated according to the formula.

2.4 Statistical Analysis

With the help of PEMs 3.2 statistical software, t-test was used to compare the measurement data between groups, the counting data were compared χ^2 test, significance level $\alpha = 0.05$.

3. Results

Changes of EMG F-wave Conduction Velocity of Median Nerve and Ulnar Nerve in Upper Limb

There was no significant difference in F-wave velocity of median nerve and ulnar nerve between the study group and the control group before treatment (P> 0.05). After treatment, the F-wave conduction velocity of EMG of anterior median nerve and ulnar nerve in the study group was significantly higher than that in the control group (P < 0.05).

Table 1. Changes of F-wave conduction velocity of upper limb median nerve and ulnar nerve before and after treatment in two groups (x ± s, M/s)

Group	Median nerve		Ulnar nerve	
	Before treatment	After treatment	Before treatment	After treatment
Study group (n = 30)	51.36±9.57	59.95±10.88	52.02±9.84	60.85±11.23
Control group (n = 30)	51.64±10.62	54.23±9.25	51.87±9.13	54.97±10.46
t	0.107	2.194	0.061	2.099
P	0.985	0.032	0.951	0.040

4. Discussion

Cervical spondylotic radiculopathy is a degenerative disease of cervical bone and its associated tissues. Imaging examination results show that the normal anatomical structure of the vertebral body changes, thus compressing the cervical nerve root, resulting in a series of cervical nerve compression symptoms, such as abnormal sensation, radiation or pressure pain symptoms. If the corrective treatment is not timely, the patient's condition may develop to the level of quadriplegia, and slowly reduce the quality of life of patients. Therefore, early systematic treatment of patients with cervical spondylotic radiculopathy symptoms, has a positive and important clinical significance.

Electromyography (EMG) is often used to detect the level of neuromuscular electrical activity when judging whether there is root damage in cervical spondylosis. In this study, we can evaluate the degree of nerve root damage by detecting the F-wave conduction velocity or EMG level and quantifying the detection index. This study showed that there was no significant difference in F-wave conduction velocity of median nerve and ulnar nerve between the study group and the control group before treatment ($P > 0.05$). After treatment, the F-wave conduction velocity of EMG of anterior median nerve and ulnar nerve in the study group was significantly higher than that in the control group ($P < 0.05$). The reason is that Acupotomy can release the compressed nerve root and the effect of Dahuoluo Capsule on dredging meridians and collaterals. Firstly, the effect of acupotomy was analyzed. The Acupotomy treatment scheme used in this study combined the mesh theory and the essence of acupotomy medical basic theory. The following effects can be achieved by loosening the C4-C7 posterior joint capsule, the starting and ending points of nuchal ligament, and the starting and ending points of vertebral occipital muscle: 1) activating the human neuroendocrine immune system: after the release of nerve compression state, the following effects can be achieved. It can stimulate the physiological mechanism of the above system, strengthen the production of analgesic substances, and achieve the analgesic effect [3]. 2) It can relieve muscle spasm: the effect of acupotomy is similar to acupuncture, and the acupuncture effect can directly act on the acupuncture site to promote capillary circulation and improve local microcirculation. The smooth operation of blood can also provide sufficient oxygen supply for muscle spasm, and effectively improve the performance of tissue hypoxia and ischemia. At the same time, it can reduce the production of inflammatory substances, promote the absorption of inflammatory substances, and ultimately relieve muscle spasm; 3) It can restore the dynamic balance of the neck: after the needle knife operation to release the soft tissue, it can effectively solve the stimulation and compression level of the soft tissue on the blood vessels and nerves, and restore the normal physiological function of the neck; 4) It can promote the recovery of neck biomechanical state: after the needle knife is effectively released, it can effectively mobilize its own body biomechanical regulation mechanism, which is conducive to the rapid outcome of clinical symptoms [4].

However, clinical reports show that it is difficult to achieve satisfactory curative effect by using needle knife alone, and some patients are not admitted to hospital in strict accordance with the treatment process, which leads to the treatment effect difficult to meet the clinical requirements. Combined application of drug treatment can further improve the clinical curative effect. Dahuoluo capsule originated from experience prescription, written by Yao Jun, a medical scientist in Ming Dynasty. The composition of the prescription is borneol, clematis, Arisaema, Radix Aconiti kusnezoffii, Notopterygii, Gastrodia elata, Rhizoma Cyperi, Agaricus, Radix Aucklandiae, radix paeoniae rubra, clove, cinnamon, asarum, Rhizoma Drynariae, Huoxiang, Kangxiang, frankincense, Pueraria, myrrh, Radix Saposhnikoviae, radix rehmanniae, Radix Polygoni Multiflori, Radix angelicae sinensis, scorpion, salamander, Bombyx batryticae, Radix Atractylodis Macrocephalae, radix rehmanniae, earthworm and Radix Aconiti, which is composed of licorice and other herbs. Under the coordination of various drugs, it can achieve the effects of dispelling wind and relieving pain, removing dampness and eliminating phlegm, relaxing tendons and activating collaterals, relieving swelling and relieving pain, dispersing stagnant fire, dredging orifices, dredging meridians, relieving exterior wind and expelling wind, overcoming dampness and stopping spasm, sedation and analgesia, dispelling wind and relieving pain, calming liver wind, regulating Qi and relieving depression, activating Qi and relieving pain, activating Qi and activating blood, reinforcing Yuanqi, reinforcing Qi and nourishing blood, removing turbidity and opening coagulation, ventilating blood, and removing deep hidden evil.Modern pharmacological studies show that Dahuoluo capsule has the following functions: (1) it can reduce the secretion of endothelin-1 by regulating the expression of procalcitonin gene, so as to promote the expansion of cerebral vessels; (2) It has neuroprotective effect: it can expand the basilar cervical blood vessels, increase the cerebral blood flow, provide sufficient oxygen for the cerebral nerve, and

relieve the cerebral blood supply deficiency caused by nerve root compression; (3) It has the effect of inhibiting platelet aggregation: by inhibiting platelet aggregation, it indirectly inhibits the process of inflammatory reaction, so as to reduce the tension of fascia, ligament and muscle caused by inflammatory reaction, and reduce the adhesion of soft tissue. In this study, the study group combined with Dahuoluo capsule treatment, compared with the control group, the change of nerve root conduction velocity was more significant. It is further confirmed that Dahuoluo capsule combined with Acupotomy can significantly relieve the symptoms of nerve root compression and improve the level of nerve conduction velocity [5,6].

To sum up, Dahuoluo capsule combined with acupotomy can effectively improve the conduction velocity of median nerve and ulnar nerve in the compression part, relieve or eliminate the compression state in patients with cervical spondylotic radiculopathy, which can be promoted.

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Nursing Intervention of Negative Emotion in Patients with Viral Hepatitis Treated with Interferon

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Abstract: Objective: To evaluate the effect of nursing intervention on negative emotion of patients with viral hepatitis treated with interferon. **Methods:** 72 patients with viral hepatitis in our hospital from May 2020 to May 2021 were selected and divided into the control group and the observation group according to the coin method, 36 cases/group, providing routine intervention for the control group and nursing intervention for the observation group. **Results:** The incidence of adverse reactions (Weight loss rate, leucopenia rate, thrombocytopenia rate and hair loss rate) in the observation group (5.56%) was lower than that in the control group (27.78%), ($P < 0.05$) with statistical significance. The SAS anxiety score (32.63 ± 3.25) and SDS depression score (31.25 ± 4.23) of the observation group were lower than those of the control group (41.15 ± 4.89) and (40.13 ± 4.89), and the PSQI sleep quality score of the observation group (5.01 ± 0.36) was lower than that of the control group (9.89 ± 1.25), ($P<0.05$) with statistical significance. The treatment compliance of the observation group (100.00%) was higher than that of the control group (83.33%), ($P < 0.05$) with statistical significance. **Conclusions:** The application of nursing intervention in the treatment of viral hepatitis patients with interferon can significantly improve the negative emotions of patients, which is worthy of promotion.

Keywords: Viral hepatitis; Interferon; Negative emotion; Nursing intervention

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1. Introduction

Viral hepatitis is a common disease in the liver system. Most of the diseases are caused by hepatitis C virus infection, and the prevalence rate of the disease after infection will be as high as 70%. Interferon is widely used in clinical treatment, but adverse reactions and serious negative emotions are prone to appear in interferon treatment, which needs to be paid more attention to in clinical practice [1,2]. In order to evaluate the effect of nursing intervention in the treatment of viral hepatitis patients with negative emotions, 72 patients with viral hepatitis in our hospital were selected to carry out the research.

2. Materials and Methods

2.1 Baseline Information

72 patients with viral hepatitis in our hospital were included in the study. The patients were divided into two groups by coin method from May 2020 to may 2021. The control group (36 cases) received routine intervention, and the observation group (36 cases) received nursing intervention. In the control group, there were 21 male patients and 15 female patients. The youngest was 25 years old, the oldest was 69 years old, and the average age was (46.65 ± 5.23) years old. In the observation group, there were 22 male patients and 14 female patients. The youngest was 24 years old and the oldest was 70 years old. The average age was (46.33 ± 5.72) years old. There was no significant difference in baseline data between the two groups ($P > 0.05$).

Inclusion criteria: (1) The patients met the diagnostic criteria of viral hepatitis; (2) The patient's age was more than 18 years old; (3) The patients' psychological stress level was normal, and they had good communication ability and expression ability.

Exclusion criteria: (1) Psychiatric patients; (2) Pa-

tients with hematological diseases; (3) Patients with history of sedative allergy in the first 3 months were enrolled.

2.2 Method

Two groups of patients with viral hepatitis were treated with interferon. The patients were provided with recombinant human interferon α2a suppository (Changsheng Dejia) produced by Changchun Institute of Biological Products Co., Ltd. with approval number: Guoyao Zhun Zi s19991019, specification: 500000 IU * 3 pieces. Before treatment, thyroid function test, blood glucose test, liver and kidney function test, urine routine test and blood routine test were provided for patients.Women (married and child-bearing) need to receive human chorionic gonadotropin test, and carry out treatment on the basis of confirming that patients meet the requirements of interferon treatment.Using subcutaneous injection, the dose is once a week, each time the dose is 180μg.

In the control group, patients were given routine intervention to observe whether there were adverse reactions during the treatment. If there were adverse reactions, doctors should be informed in time for treatment and drug education.

In the observation group, the patients were given nursing intervention. (1) Before the use of nursing, we need to explain the indications, treatment effect and possible adverse reactions of interferon for patients before treatment, let patients know the side effects of interferon, combined with the understanding ability of patients, carry out propaganda and education for patients, inform patients that the adverse reactions are temporary, do a good job in the observation of patients' emotions, and improve the degree of cooperation of patients. (2) During the treatment, the patients need to take medicine according to the doctor's advice. During the injection, the injection position needs to be changed frequently to reduce the patients' muscle pain and local reaction. Fatigue and muscle soreness will appear in 3-8 hours after interferon injection, so we can adjust the time of drug injection for patients to spend adverse reactions in sleep. In addition, provide necessary psychological nursing intervention for patients, pay attention to the emotional changes of patients, strengthen propaganda and education, guide patients' self-health detection and nursing, actively answer patients' questions, reduce patients' stress reaction. (3) The nursing after drug withdrawal, under the guidance of the doctor, should be followed up regularly after drug withdrawal. After drug withdrawal, thyroid function should be detected every 3 months, and liver function should be detected every 6 months.

2.3 Observation Index

(1) The incidence of adverse reactions including weight loss, leucopenia, thrombocytopenia and alopecia were calculated. (2) SAS anxiety score, SDS depression score and PSQI sleep quality score were calculated. SAS score, SDS score and PSQI score were inversely correlated with anxiety, depression and sleep quality. (3) The treatment compliance of the two groups was calculated. The evaluation standard of compliance: according to the patient's compliance with the doctor's advice, it can be divided into non-compliance, partial compliance and complete compliance.

2.4 Statistical Processing

Statistical software spss23.0 was used to process the data of two groups of patients with viral hepatitis. The incidence of adverse reactions and treatment compliance (%) were expressed, and the differences between groups were analyzed by chi square test.SAS score, SDS score and PSQI score were expressed by (mean ± SD), and the differences between groups were analyzed by t test.With statistical significance, then ($P < 0.05$).

3. Results

3.1 Two Groups of Patients with Viral Hepatitis Incidence of Adverse Reactions Compared

As shown in Table 1, the incidence of adverse reactions in the control group was significantly higher than that in the observation group, with significant difference between groups, ($P < 0.05$) with statistical significance.

Table 1. Comparison of the incidence of adverse reactions between the two groups {n (%)}

Group	Weight loss	Leukopenia	Thrombocytopenia	Alopecia	Adverse reaction rate
Observation group (n = 36)	2(5.56)	0(0.00)	0(0.00)	0(0.00)	2(5.56)
Control group (n = 36)	5(13.89)	2(5.56)	2(5.56)	1(2.78)	10(27.78)
χ^2value	-	-	-	-	6.4000
P value	-	-	-	-	0.0114

3.2 The Bad Mood and Sleep Quality of Two Groups of Patients with Viral Hepatitis were Compared

As shown in Table 2, there was no significant difference in the bad mood and sleep quality between the two groups before nursing. There was no statistical significance (P > 0.05). After nursing, the SAS score, SDS score and PSQI score of the observation group were lower than those of the control group, and there was significant difference between the two groups, (P < 0.05) with statistical significance.

3.3 Comparison of Treatment Compliance between Two Groups of Patients with Viral Hepatitis

As shown in Table 3, the treatment compliance of the control group was lower than that of the observation group, and there was significant difference between the two groups, (P < 0.05) with statistical significance.

Table 2. Comparison of bad mood and sleep quality between two groups of patients with viral hepatitis {($\bar{x}$ ±s)score}

Group	SAS score		SDS score		PSQI score	
	Before nursing	After care	Before nursing	After care	Before nursing	After care
Observation group (n = 36)	58.69±6.23	32.63±3.25	59.64±7.52	31.25±4.23	15.46±2.22	5.01±0.36
Control group (n = 36)	58.49±6.11	41.15±4.89	59.49±7.55	40.13±4.89	15.29±2.19	9.89±1.25
T value	0.1375	8.7064	0.0844	8.2404	0.3270	22.5090
P value	0.8910	0.0000	0.9329	0.0000	0.7446	0.0000

Table 3. Comparison of treatment compliance between two groups of patients with viral hepatitis {n (%)}

Group	Noncompliance	Partial compliance	Full compliance	Compliance rate
Observation group (n = 36)	0 (0.00)	12 (33.33)	24 (66.67)	36 (100.00)
Control group (n = 36)	6 (16.67)	19 (52.78)	11 (30.56)	30 (83.33)
X2 value	-	-	-	6.5455
P value	-	-	-	0.0105

4. Discussion

Interferon is a common drug in the treatment of viral hepatitis. It has a wide range of application and significant curative effect. It is recognized as an effective drug in clinic. However, the treatment of interferon is more expensive, prone to many adverse reactions, patients will appear great negative emotions during the treatment [3]. Providing effective nursing intervention during the treatment of patients with viral hepatitis has a positive effect on improving the adverse reactions and negative emotions of patients. The incidence rate of viral hepatitis is high, patients have a long time of illness and need long-term medication. In addition, patients in long-term treatment are vulnerable to disease interference, adverse reactions, affect sleep and mood, reduce the quality of life of patients [4,5]. Nursing intervention, through the use of pre care can better help patients prepare for psychological, reduce the stress of patients, improve patient compliance. Through the nursing during the treatment, it can reduce the local reactions and adverse reactions of patients, actively communicate with patients, and strengthen the detection, which can reduce the adverse emotions and psychological problems of patients [6]. Through the nursing after drug withdrawal, patients can be informed to take active and regular detection to reduce the adverse reactions of patients [7]. According to the results of this study, the incidence of adverse reactions such as weight loss rate, leucopenia rate, thrombocytopenia rate and hair loss rate in the observation group were lower than those in the control group, the SAS anxiety score and SDS depression score in the observation group were lower than those in the control group, the PSQI sleep quality score in the observation group was lower than that in the control group, and the treatment compliance in the observation group was higher than that in the control group, (P < 0.05) with statistical significance.

In conclusion, the nursing intervention of negative emotions in patients with viral hepatitis during interferon treatment can effectively improve the compliance of patients, improve the bad mood and sleep quality of patients, reduce the incidence of adverse reactions, and has the value of use and promotion.

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Analysis on Influencing Factors and Preventive Measures of Traditional Chinese Medicine Dispensing Quality

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Abstract: Objective: To study the factors affecting the dispensing quality of traditional Chinese medicine and give the corresponding preventive measures. **Methods:** 50 patients with quality problems of traditional Chinese medicine dispensing in our hospital from February 2018 to February 2020 were divided into observation group and control group to analyze the causes of the problems. **Results:** The number of patients with cross bucket problem was 23, accounting for 46.00%. There were 13 patients with poor quality of traditional Chinese medicine, accounting for 26.00%. There were 8 cases of unclear drug delivery explanation, accounting for 16.00%. There were 2 cases with dose problems, accounting for 4.00%. There were 2 cases of drug confusion, accounting for 4.00%. There was 1 case of missing drugs, accounting for 2.00%. There was one patient with incorrect footnote execution, accounting for 2.00%. **Conclusions:** The factors affecting the quality of traditional Chinese medicine dispensing are cross bucket problem, dose error, drug distribution, etc. Among them, cross bucket problem is the most important factor, which should be paid attention to and necessary measures should be taken to prevent it.

Keywords: The quality of traditional Chinese medicine dispensing; Influencing factors; Preventive measures

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1. Introduction

When patients choose traditional Chinese medicine to treat diseases, they often need targeted treatment according to the specific situation of patients, so the requirements for traditional Chinese medicine dispensing are also different. Traditional Chinese medicine dispensing refers to dispensing drugs for patients according to the prescriptions issued by doctors. In this process, processing drugs, traditional Chinese medicine theory and other aspects need to be involved. If there are errors in the dispensing process, the efficacy of prescriptions will be affected and patients will be harmed [1]. In order to strengthen the safety of traditional Chinese medicine dispensing, 50 patients with traditional Chinese medicine dispensing quality problems in our hospital were selected to analyze the factors affecting the quality of traditional Chinese medicine dispensing and the corresponding preventive measures. The research results are as follows.

2. Data and Methods

2.1 General Information

50 patients with problems in the quality of traditional Chinese medicine dispensing in our hospital from February 2018 to February 2020 were selected, including 27 male patients and 23 female patients. The maximum age of the patients was 67 years old, the minimum age of the patients was 45 years old, and the average age was (57.67 ± 5.73) years old.

2.2 Methods

The cases of all patients participating in this study were analyzed, and the factors affecting the quality of traditional Chinese medicine dispensing were summarized.

2.3 Evaluation Criteria

The number of quality problems of traditional Chinese medicine dispensing in patients participating in this study was counted, and the proportion of each influencing factor was calculated.

2.4 Statistical Analysis

SPSS 24.0 statistical software was used to process the data, and the counting data were expressed in (n /%), χ^2 test, the measurement data are expressed in (± s), t test, $P < 0.05$ was considered statistically significant.

3. Results

The factors affecting the quality of traditional Chinese medicine dispensing are summarized in Table 1.

Table 1. Factors affecting the quality of traditional Chinese medicine dispensing [n /%]

Group	Cross bucket problem	Poor quality of traditional Chinese medicine	Unclear drug delivery explanation	Dose problem	Drug confusion	Missing drugs	Incorrect footnote implementation,
Number of cases	23	13	8	2	2	1	1
Proportion (%)	46.00	26.00	16.00	4.00	4.00	2.00	2.00

4. Discussion

The traditional Chinese medicine prescription in our hospital adopts electronic prescription, so the traditional prescription is scrawled and difficult to identify, and the deployment quality problem caused by it no longer exists. However, in the research on the quality of traditional Chinese medicine dispensing in our hospital, it is found that there are some problems, such as cross bucket problem, poor quality of traditional Chinese medicine, unclear drug delivery explanation, dose problem, drug confusion, missing drugs, incorrect footnote implementation, etc. The following summarizes the factors affecting the quality of traditional Chinese medicine dispensing and gives solutions.

First, the problem of cross bucket and its solutions. It is possible that one or more of a patient's traditional Chinese medicine may be misplaced with other drugs, resulting in wrong prescription allocation and affecting the treatment effect. The primary reason for the occurrence of cross bucket is that the bucket spectrum is not standardized. The drugs in the traditional Chinese medicine pharmacy are placed in the medicine bucket, and dozens of medicine buckets form the medicine dispensing cabinet used in the traditional Chinese medicine room. Because there are many drugs in the traditional Chinese medicine room, in order to facilitate the work of dispensing personnel, the drugs need to be arranged in the medicine bucket, and this arrangement method is called bucket spectrum. When the bucket spectrum arrangement is unscientific, for example, three different grids with different performance and efficacy drugs are packed in the same drawer, it is easy to bring one drug to another, resulting in the phenomenon of cross bucket, and it is difficult for the dispensing personnel to find the drugs quickly and accurately, which is easy to lead to mistakes. Our hospital now uses traditional Chinese medicine small packaging and traditional Chinese medicine granules. New medicine racks are placed on both sides of the corridor, arranged with the initials of the medicine name from A to Z, but there is a new situation of cross bucket. Adjacent drugs will cross each other through the partition gap, and the outer packaging is very similar, which should not be recognized by the dispensing personnel, resulting in deployment errors. To solve this problem, the following measures can be taken: 1) Strengthen the daily management of traditional Chinese medicine room to ensure the correct storage position of drugs; 2) The dispensing personnel need to enhance their sense of responsibility and improve their work detail; 3) The verification personnel shall increase the comprehensiveness of the verification work to ensure the correctness of each paste of traditional Chinese medicine.

Second, poor quality of traditional Chinese medicine and its solutions. The variety of traditional Chinese medicine is abundant. With the increase of human activity space, the environmental scope suitable for the growth of traditional Chinese medicine is shrinking, and the dosage of traditional Chinese medicine is increasing, so artificial planting is needed. The quality of artificially planted traditional Chinese medicine is uneven. On the one hand, it is difficult for artificial planting to meet the conditions of natural growth, and many planting personnel lack relevant traditional Chinese medicine planting knowledge, which makes the quality of planted traditional Chinese medicine poor [1]. On the other hand, in order to make higher profits, many traditional Chinese medicine growers will overuse pesticides and other substances in the planting process, resulting in a significant decline in the quality of traditional Chinese medicine. From the above aspects, it can be seen that the quality of traditional Chinese medicine decoction pieces made from this traditional Chinese medicine is unqualified, And after the processing of traditional Chinese medicine into traditional Chinese medicine decoction pieces, it needs to go through long-term storage, transportation and other steps. During this period, if the storage conditions of traditional Chinese medicine decoction pieces are unqualified or the transportation conditions are inappropriate, the quality of traditional Chinese medicine decoction pieces will be reduced. And many illegal vendors in order to seek more benefits will also be mixed with some inferior drugs, which will further affect the quality of drugs. To solve this problem, hospitals and relevant drug supervision departments need

to take effective prevention measures to ensure the quality of purchased drugs [2]. First of all, the hospital should select regular and qualified manufacturers, and send special personnel to inspect the manufacturers in all aspects. Secondly, in the process of traditional Chinese medicine dispensing, dispensing personnel should check the quality of drugs, and report to the hospital in time once they find inferior drugs purchased. Finally, the relevant drug supervision departments need to strengthen supervision, inspect and manage the operation, storage conditions and transportation of traditional Chinese medicine, and severely crack down on the circulation of inferior traditional Chinese medicine in the market.

Third, unclear drug delivery explanation and its solutions. The last step in the process of traditional Chinese medicine dispensing is dispensing. When the dispensing, dispensing personnel need to check the patient's information during dispensing, and then they need to check the drugs according to the prescription to avoid mistakes. Finally, dispensing personnel need to inform patients of the use of drugs and precautions. In the process of dispensing drugs, dispensing personnel may not clearly explain the method of taking drugs, decocting methods and other matters needing attention, which may lead to mistakes in the process of decocting drugs and medication, thus affecting the therapeutic effect [3]. The reasons for the above problems are often caused by the non-meticulous work of dispensing personnel in the process of dispensing drugs, the unstable basic knowledge of dispensing personnel and so on. In order to avoid the above problems, the following measures can be taken for effective prevention. On the one hand, the professional skills training of dispensing personnel should be strengthened, so that the dispensing personnel can skillfully master the incompatibility, the decocting methods of various drugs, the precautions during medication, etc. On the other hand, it can effectively manage the dispensing process and formulate the detailed process of traditional Chinese medicine dispensing, so that the dispensing personnel can act according to the process, which can greatly avoid problems in the dispensing process [4].

Fourth, dose problems and their solutions. To ensure the correctness of the prescription, it is necessary to ensure the quality of the drugs, medication methods, decoction methods and other factors. In addition to the above factors, the dose of drugs also has a great impact on the efficacy of the prescription. In the actual traditional Chinese medicine dispensing, a variety of drugs need to be used, and there are many patients, which increases the workload of the dispensing personnel. In order to speed up the work efficiency, some dispensing personnel will directly grab the drugs by hand and determine the dose according to past experience and feelings, which will lead to errors, making the dose of some drugs insufficient or excessive. However, with the use of small packaging of traditional Chinese medicine decoction pieces and the emergence of traditional Chinese medicine granules, the dose problems caused by the above problems are significantly reduced. The small packaging of traditional Chinese medicine decoction pieces is the electronic weighing and packaging. Traditional Chinese medicine granules refer to using modern technology to extract the effective ingredients of traditional Chinese medicine into small particles. However, there are still new problems in the actual work. For example, in the actual drug dispensing process, 3g/package may be payable, 5g/package may be paid, etc. Therefore, it is necessary to check and confirm the dispensing of drugs by dispensing personnel to ensure the correct dosage of drugs.

Fifth, drug confusion and its solutions. There are many kinds of traditional Chinese medicine, and the names of many drugs are very similar. Under the great work pressure, the dispensing personnel will make mistakes. If the dispensing personnel do not work carefully, it will also lead to the confusion of patients' drugs. This study found that during the preparation of traditional Chinese medicine, Evodia rutaecarpa and Cornus officinalis, Bulb of Thunberg Fritillary and Tendril-leaf fritillary bulb, Red peony and White peony are confused, which will not only affect the efficacy of the prescription, but also affect patients [5]. To solve this problem, firstly, it is necessary to improve the seriousness of dispensing personnel's work, and secondly, to check and inspect the drugs after dispensing.

Sixth, missing drugs and their solutions. In the process of traditional Chinese medicine dispensing, there are few drug omissions. The direct cause of this problem is the negligence of the dispensing personnel. This requires the dispatcher to pay more attention to avoid omissions in the work, and check again after the deployment.

Seventh, incorrect footnote implementation and its solutions. When doctors issue prescriptions again, they will mark on the upper right or lower left corner of the name of the prescription Chinese medicine according to the needs of treatment to remind dispensing personnel, who need to operate according to the footnote content. In order to avoid problems in this process, it is necessary to check before the end of the deployment.

According to the research results of this paper, there are several problems leading to the deployment of traditional Chinese medicine, such as cross bucket problem, poor quality of traditional Chinese medicine, unclear dispensing explanation, dose problem, drug confusion, drug omission and incorrect footnote implementation. The factor with the largest proportion is cross bucket problem, followed by poor quality of traditional Chinese medicine and unclear dispensing explanation, and the factor with the smallest proportion is missing drugs, incorrect footnote implementation, etc. It can be seen that the quality problems of traditional Chinese medicine dispensing are mainly caused by the mistakes of doctors, drugs and dispensing personnel. So for maximum to avoid the traditional Chinese medicine dispensing quality problems, it is necessary to improve and improve the professional level and sense of responsibility of doctors and dispensing personnel from the aspects of doctors, drug quality and dispensing personnel, Regularly train doctors and dispensing personnel to improve their professional level. Regular assessment can be conducted, and additional rewards can be given to those with excellent assessment results, so as to stimulate the learning enthusiasm of doctors and dispensing personnel. In addition, the quality of traditional Chinese medicine shall be strictly reviewed, and the quality level of traditional Chinese medicine dispensing shall be tested regularly to ensure the therapeutic effect.

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Analysis of Anti-infective Treatment and Monitoring of Adverse Reactions in a Case of Pulmonary Infection with Multidrug Resistant Acinetobacter Baumannii

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Abstract: Objective: To discuss the characteristics of anti-infection treatment of multidrug-resistant acinetobacter baumannii in pulmonary infection and the necessity of pharmaceutical care. **Methods:** Taking a case of pneumonia with multidrug-resistant acinetobacter baumannii indicated by pulmonary alveolar lavage fluid as an example, which was treated by clinical pharmacists in the form of consultation. And expounding the importance of rational use of antibiotics and characteristics of pharmaceutical care by referring to literature and pharmacokinetics. **Results**: Multidrug-resistant acinetobacter baumannii was found by alveolar lavage after admission, and the infection symptoms were not effectively controlled after tigecycline treatment. With the consultation assistance of clinical pharmacists, it was found that the patient had low albumin, which had a great influence on tigecycline with high protein binding rate. Later, cefoperazone sulbactam + tigecycline was used on the premise of albumin supplementation. That is recommended by clinical pharmacists. One week later, the patient's symptoms improved and were discharged. During the treatment, the clinical pharmacist took pharmaceutical care of the patient, timely solved the adverse reaction of vomiting in the early stage of medication, and solved the concerns of doctors. **Conclusions:** In the case of pulmonary infection with multidrug-resistant Acinetobacter baumannii, not only the drug sensitivity list, we should also refer to the pharmacokinetics of drugs and monitor the adverse reactions of drugs in the process of treatment, which has a certain positive significance for the scientific use of antibiotics.

Keywords: Acinetobacter baumannii; Antiinfective therapy; Clinical pharmacist; Pharmacokinetics

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1. Introduction

Lung Infection is an inflammation that occurs in the terminal airway, alveoli, and interstitium of the Lung. It is caused by pathogenic microorganisms, physical and chemical factors, immune damage, allergies, and other factors.The most common clinical pulmonary infection is caused by pathogen infection, such as bacterial infection, fungal infection, viral infection, atypical pathogen infection, etc. bacterial pneumonia is the most common [1]. Acinetobacter baumannii has a strong ability to obtain drug resistance and clonal transmission. Multi drug resistance, wide drug resistance and all drug resistance Acinetobacter baumannii are prevalent all over the world. It has become one of the most important pathogens of nosocomial infection in China.The most common site of nosocomial infection of Acinetobacter baumannii is the lung [2], which is an important pathogen of hospital acquired pneumonia (HAP), especially ventilator-associated pneumonia (VAP). Because Acinetobacter baumannii is a conditional pathogen, patients often have high-risk factors such as low immunity, long-term use of antibiotics, malnutrition and so on before they are infected with Acinetobacter baumannii [3]. The prognosis of patients is often poor.

The author mainly reported the treatment process of a patient with pulmonary acinetobacter baumannii infection, combined with relevant literature guidelines and through analysis and correction of the patient's anti-infection treatment plan. To provide clinicians or pharmacists with relevant experience in the future diagnosis and treatment or consultation process

2. Summary of Medical Records

An 88-year-old male patient with a history of COPD

was hospitalized due to "cough, sputum and fever for 3 days". The patient had cough, expectoration and paroxysmal cough after catching cold 3 days ago. He coughed light yellow viscous sputum, which was not easy to cough out, accompanied by fever, up to 40.0 °C. Chest CT showed that multiple patchy increased density shadows were found in the posterior segment and lower lobe of the upper lobe of the right lung. After admission, the patient was given cefoperazone sulbactam (3G Q8H IVGTT) + moxifloxacin hydrochloride and sodium chloride injection (0.4g QD IVGTT) for infection treatment. After 3 days of improvement, he coughed and expectorated again. The heat peak reached 39 °C and coughed a small amount of white mucus. The blood routine cell count showed that the leukocyte count was normal, the neutrophil count was 7.87x109/L, and the CRP hint was 70.7mg/L^{-1}. Sputum culture and blood culture were monitored, and amikacin injection (0.4g QD IVGTT) was added for anti infection treatment. After 3 days, the patient's symptoms were still not improved, and he still had fever, cough and expectoration. Reexamination of blood routine showed that white blood cell count was 14.56*109/L and neutrophil count was 7.87x109/L. Sputum culture and blood culture were negative. Bronchoalveolar lavage fluid test was carried out with the consent of the patient and his family. The alveolar lavage fluid showed Acinetobacter baumannii, drug sensitivity showed that he was sensitive to tegacyclin, MIC = 2ug/mL, resistant to all the rest.

The patient had a history of chronic obstructive pulmonary disease for 20 years. He inhaled Salmeterol Xinafoate and Fluticasone Propionate Powder for Inhalation regularly. He had no history of hypertension and diabetes. He had 35 years of smoking history. And smoked an average of 20 per day. He had quit smoking for 10 years. He has quit smoking for 10 years and no drinking history. Denied a history of drug allergy. Body temperature at admission: 38.0 °C, low respiratory sound on both lungs, dry and wet rales on both lungs.Admission diagnosis: bacterial pneumonia.

3. Treatment Process

On the day of admission, relevant examinations were completed, and symptomatic treatment such as acetyl cysteine, ambroxol expectorant, terbutaline to reduce phlegm and ease asthma was given. Cefoperazone sulbactam (2:1) (3g q8h IVGTT day 1-6) + Moxifloxacin hydrochloride sodium chloride injection (0.4g q24h IVGTT day 1-6) was given anti-infection treatment. The patient felt that the disease symptoms were alleviated.

On the 3rd day after admission, the patient's symptoms worsened, the number of cough and expectoration increased, and the heat peak reached 39 °C. CRP prompt: 70.7mg/L^{-1}, neutrophil count: 7.87x109/L. The doctor thought that the anti infection strength was not enough. After sputum culture and blood culture, amikacin for injection (0.4g q2h IVGTT on the 3rd-6th day) was added to strengthen the anti infection strength.

On the 6th day after admission, the patient still had no improvement in symptoms, still coughed and expectorated, and the heat peak reached 39.3 °C. Blood routine showed that the leukocyte count was 14.56 * 109/L, and the neutrophil count was 7.87x109/L. Sputum culture and blood culture were negative, and Acinetobacter baumannii was indicated in the alveolar lavage fluid. According to the drug sensitivity prompt, the doctor used tegacyclin for injection (50mg q12h IVGTT days 6-18 after the load dose of 100mg on the first day)

On the 8th day after admission, the patient's symptoms and body temperature still did not improve, and the heat peak reached 39.7 °C, and the patient began to have nausea and vomiting. The vomit was the content of the stomach and vomited three times during the day. The doctor invited the clinical pharmacist for consultation. The clinical pharmacist found that the patient's albumin level was low, 25.6g/L. The clinical pharmacist suggested that the patient should be supplemented with albumin, and cefoperazone sulbactam (1:1) (3G q6h IVGTT days 8-18) should be used again for combination therapy. After pharmaceutical consultation and excluding the patient's original disease, the clinical pharmacist considered nausea and vomiting as the adverse reaction of tegacyclin, and recommended routine symptomatic treatment without stopping the drug. In the process of treatment, it is necessary to test the patient's liver and kidney function and blood routine.

On the 12th day after admission, the patient felt that the symptoms were improved, the cough and expectoration were reduced.The sputum was white and easy to cough up,the symptoms of nausea and vomiting did not appear again, the body temperature decreased, the heat peak was 37.8 °C, the blood routine showed that the leukocyte count was 9.56 * 109/L, CRP: 12.5mg/L^{-1}, and the liver and kidney function and coagulation routine of the patient were normal.

On the 18th day after admission, the patient had stable body temperature, no cough and sputum, normal blood routine, CRP: 10.0mg/L^{-1}, no nausea and vomiting, and was discharged tomorrow.

4. Discussion

4.1 Analysis of Baumannii with Lung Infection

Bacterial pneumonia is the most common cause of pneumonia and the most common type of infection in China. With the aging of the world population, pneumonia in the elderly has become a more and more important clinical problem. Pneumonia is one of the main causes of hospitalization among people over 65, and in some cases is the main cause of death in this population. Even for people over the age of 60, pneumonia is a predictor of increased mortality after the onset of a specific disease and in the years later [4,5]. Although there are cases in which mild pneumonia symptoms can be self limiting, the use of antimicrobial agents is the main means to treat pneumonia. In terms of reducing microbial burden, antimicrobial therapy can reduce the duration of disease, the risk of complications and mortality [6].

Acinetobacter baumannii is a gram-negative bacillus, which can cause serious hospital and community-acquired infection. It is a well-known conditional pathogen [3]. Due to the abuse of antibiotics, Acinetobacter baumannii has become the most common MDR bacteria in China. Acinetobacter baumannii has strong resistance and high drug resistance rate. The guidelines suggest that Acinetobacter baumannii treatment should be combined and used in sufficient dose [7]. According to Chinet, Acinetobacter baumannii in China is generally sensitive to polymyxin, cefoperazone, sulbactam and tegacyclin.

The patient with pulmonary infection in this case is an elderly male with a history of COPD. Considering that the immune defense system of the patient's lung is weak [8]. He came to our hospital for treatment because of bacterial pneumonia. Under the condition of using broad-spectrum antibiotics, only bacteria sensitive to antibiotics were removed, resulting in an increase in the breeding space of antibiotic insensitive Acinetobacter baumannii, which accelerated bacterial reproduction, In addition, due to the original disease COPD and age, the bacterial clearance is too slow, resulting in the aggravation of patients' symptoms [9]. Then, Acinetobacter baumannii was detected in the sterile alveolar lavage fluid. This culture is considered to be meaningful [10]. It needs to be actively treated according to drug sensitivity, so as to prevent the symptoms from aggravating again and even infecting the whole body, resulting in sepsis.

4.2 Analysis of Anti Infection Treatment Scheme of Patients

4.2.1 Rationality evaluation of the initial antimicrobial treatment plan before consultation

The patient was diagnosed with community-acquired pneumonia at the initial admission, however, due to the structural lung disease caused by COPD, structural lung disease is believed to aggravate the risk of Pseudomonas aeruginosa infection in patients [11]. For the initial treatment, drugs that can cover Pseudomonas aeruginosa should be selected. After the patient is admitted to the hospital, generally speaking, anti aeruginosa can be selected β Lactam drugs are used together with quinolones against Pseudomonas aeruginosa. In the initial treatment, cefoperazone sulbactam is considered to have anti aeruginosa activity, and the dosage frequency is consistent with the antibacterial PK/PD theory, but moxifloxacin is not considered to have anti Pseudomonas aeruginosa activity. Recently, it has been proposed that quinolones and fluoroquinolones may cause the risk of aortic aneurysm in the elderly. At present, there is evidence that the elderly are generally after the age of 60. The infection possibility of atypical pathogens becomes smaller, so the use of moxifloxacin does not improve the coverage. Considering the safety, the treatment scheme of moxifloxacin is inappropriate, so it should be considered to use levofloxacin lactate or cefoperazone sulbactam alone [12].

Three days later, the patient symptoms, patient temperature and inflammation index suggest infection is not well controlled, doctors choose to continue to expand the treatment, the patient after the hospital, to aggravation, according to the consensus diagnosis, the patient should consider hospital acquired pneumonia (HAP), repeated infection in the short term, considering the high risk of death, here choose the same anti-aerugin active amikacin, double gram-negative bacteria capping treatment.

4.2.2 Failure causes and adjustment scheme of tegacyclin treatment in consultation

After admission, the doctor gave cefoperazone sulbactam + moxifloxacin + amikacin with antibacterial spectrum including Pseudomonas aeruginosa and most Gram-negative bacteria. After 6 days of treatment, the infection was still poorly controlled. According to the drug sensitivity of alveolar lavage fluid, Acinetobacter baumannii was only sensitive to tegacyclin, but after the doctor started tegacyclin treatment, there was still fever Cough and other symptoms. By consulting the literature, clinical pharmacists found that the phenotypes of common Acinetobacter baumannii genotype 3 and Acinetobacter baumannii genotype 13tu are very similar in biochemistry, so the drug resistance and virulence of the four flora are very similar [13]. Acinetobacter baumannii has many drug resistance pathways, and its enzyme production and membrane protein have changed to common drug resist-

ance pathways [14]. However, according to the results of machine, the sensitivity rate of Acinetobacter baumannii to tegacyclin has always been at a high stage, but tegacyclin has a high protein binding rate. Due to the weight loss of COPD all year round, the patients have poor nutrition and low albumin, only 25g/L, Hypoproteinemia has a great impact on drugs with high protein binding rate [15].

The literature points out that the clinical significance of protein binding for drugs lies in controlling the free drug binding in the body and playing a role. When drugs with high protein binding rate are affected by hypoproteinemia, due to insufficient protein binding, the increase of free drugs will lead to the abnormal distribution, excretion and metabolism of drugs. Finally, it will cause the decrease of blood drug concentration [16]. After discovering this, the clinical pharmacist pointed it out to the doctor, gave medication education to the patient, informed the patient of the importance of albumin infusion, and the family members expressed their understanding and consent.

In addition, reactivation of cefoperazone sulbactam is also an important part of treatment. For Pan drug resistant bacteria (XDR) sensitive only to tegacyclin, multi drug combination treatment should be used as much as possible even when drug sensitivity indicates that no drugs are available. However, considering the failure of previous treatment with cefoperazone sulbactam, clinical pharmacists found that, the previous manufacturer's specification ratio was 3G per bottle of cefoperazone sulbactam (2:1), that is, only 1g of sulbactam in one dose, and only 3G per day in the case of Q8H infusion.

The guidelines suggest that the common dose of sulbactam in Acinetobacter baumannii infection is 4.0g/d [7,16]. If it is in XDR, it can even be increased to 6.0g/d. Therefore, the ratio of 1:1 is selected for the treatment of cefoperazone sulbactam. At the same time, according to the PK/PD theory, for time-dependent drugs, the time of T > MIC is prolonged, and the dose of sulbactam is also increased to 6.0g/d, The two drugs were treated for 10 days. During this process, the pharmacist communicated with doctors and nurses to prompt the monitoring of patients' coagulation function and renal function. In case of abnormalities, the treatment plan should be adjusted in time [7].

It is a pity that the patient did not receive alveolar lavage and microbiological examination at the later stage of treatment, and the patient did not have a better specific procalcitonin test. Procalcitonin can not only evaluate the curative effect, but also guide the withdrawal of antibiotics and the prognosis of the patient. It has great clinical practical value in anti infection. We need to increase the promotion of calcitonogenen examination in later cases and treatments.

4.3 Monitoring and Analysis of Adverse Reactions by Clinical Pharmacists

The patient developed nausea and vomiting when using tegacyclin on the 8th day of admission. After excluding the symptoms caused by the patient's disease (for example, some pneumonia and stress ulcer can also cause similar symptoms), the clinical pharmacist considered that the adverse reaction of the drug should be caused by tegacyclin according to the time correlation. And use the Nordic adverse reaction related scale to judge, so as to use the causality supported by objective evidence and quantitative test results, to avoid relying on personal empirical judgment [17]. According to the preliminary calculation, the score of tegacyclin is about 7 (Table 1). According to the evaluation, it is considered "likely to be relevant".

As previously mentioned, the tetracycline used in the patients was a high protein binding rate drug. The patient had hypoproteinemia, and tegecycline did not have sufficient albumin for binding, resulting in more free drugs in the blood, increasing the activity of tegecycline, but also increasing the metabolism and excretion of tegec-cycline. Generally, fat soluble compounds are filtered through the glomerulus, then reabsorbed at the renal tubular membrane. But usually the biological transformation reaction in vivo is to produce more polar, inactive metabolites excluded from the body. Tegacyclin loses its pharmacological activity while being biotransformed by the first phase due to too much free state. In addition, tetracycline and glycylcycline drugs have the characteristics of "bone reservoir" [18]. Therefore, the concentration of tegacyclin in the blood increases, but the clearance rate is higher, resulting in the results of treatment not reaching the ideal effect, and the increase of blood concentration leads to the possibility of side effects, so the patients have adverse reactions of nausea and vomiting.

According to the information consulted by the clinical pharmacist, the side effects of nausea and vomiting of tegacyclin generally occur within 1-2 days before infusion, and in view of the necessity of anti infective drugs, the treatment should be continued, and the doctor should be informed to monitor the patient's liver and kidney function and digestive system symptoms [19-20]. On the 12th day after admission, the patient's nausea and vomiting disappeared, and there were no abnormal gastrointestinal symptoms and liver function. On the 18th day, the patient's infection symptoms disappeared, and he will be discharged tomorrow. It has been 12 days since tegacyclin was used to treat HAP. It is recom-

Table 1. Nuo's evaluation results of nausea and vomiting caused by tegacyclin

Related issues	Scores			
	Yes	No	Unknown	Rating grounds
1.Whether the ADR was previously conclusive was reported ?	+1			It is suggested in the ABX guidelines that about 20 – 30% of patients may develop nausea and vomiting
2.Whether the ADR occurred after the use of a suspicious drug ?	+2			Nausea and vomiting occur after the use of tegecycline
3. Whether this ADR is relieved after withdrawal or application of an antagonist ?			0	The patient used no antagonist and was not stopped
4.Does the ADR appear after the reuse of a suspicious drug ?			0	The patient did not stop the medication after tetracycline administration
5.Whether there is any other cause of the ADR alone ?		+2		After investigation, there are no other drugs or diseases that can cause nausea or vomiting
6. Is the ADR repeated after a placebo application?			0	The patient did not use a placebo
7.Whether the drug reaches a toxic concentration in the blood or other body fluids ?	+1			The concentration of free drug increased, likely exceeding the treatment concentration
8. Does the ADR increase with an increasing dose?Dose dose reduced and remission? ?			0	The patient did not adjust for the drug dose
9.Whether the patient has been exposed to the same or similar drugs with similar reactions ?			0	The patient had no previous history of glycine ycline or tetracycline
10. Whether there was any objective evidence confirming the response ?	+1			Patient nausea and vomiting without any symptoms or cause can be regarded as objective evidence
Total score	7			

mended to stop tegacyclin.

5. Summary

To sum up, the anti-infection treatment plan of the patient was changed several times and suffered many setbacks. However, with the joint assistance of pharmacists, doctors and nurses, the patient recovered from infection and was discharged from the hospital. In this case of senile pneumonia caused by hospital acquired Acinetobacter baumannii, we deeply realize that anti infection treatment is not as simple as using correct antibiotics to cover possible pathogens and target treatment. We also need to know the PK/PD characteristics of drugs, the analysis of in-depth drug sensitivity reports, the distribution and metabolism of drugs, so that, even the same drug treatment will be very different in the treatment results. In the treatment of tegacyclin, a drug with high protein binding rate, we must pay attention to the patient's albumin value and liver function. Otherwise, in the treatment, the binding protein may be insufficient due to the low albumin, and the free tegacyclin may be metabolized, resulting in poor treatment effect. In addition, we should pay attention to the adverse reactions of tegacyclin during treatment. The most common adverse reaction is nausea and vomiting, but it usually disappears within 1-2 days. Only symptomatic treatment is needed. In the case of middle-aged and elderly patients, special attention should be paid to the liver and kidney function of patients. If there are abnormalities or adverse reactions such as pancreatitis, timely measures should be taken to avoid the aggravation of adverse reactions.

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Effect of Low Dose Lyophilized Recombinant Human Brain Natriuretic Peptide on Patients with Severe Heart Failure Complicated with Hypotension after Emergency PCI in Acute Anterior Wall AMI

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Abstract: Objective: To study the effect of low-dose lyophilized recombinant human brain natriuretic peptide on patients with severe heart failure complicated with hypotension after emergency PCI in acute anterior wall AMI. **Methods:** 48 patients with severe heart failure complicated with hypotension after emergency percutaneous coronary intervention (PCI) for acute anterior myocardial infarction (AMI) from September 2020 to September 2021 were included in the study. They were randomly divided into reference group and study group, with 24 cases in each group. The reference group was treated with general treatment, and the study group was treated with low-dose lyophilized recombinant human brain natriuretic peptide on the basis of the reference group. The brain natriuretic peptide, blood pressure and left ventricular ejection fraction of the two groups were observed before and after treatment. **Results:** The level of brain natriuretic peptide in the study group was lower than that in the reference group, the left ventricular ejection fraction was higher than that in the reference group, and the systolic and diastolic blood pressure were higher than that in the reference group ($P < 0.05$). The improvement effect of LVEDd (50.43 ± 6.87) mm and LVESD (45.37 ± 7.16) mm in the observation group was better than that in the control group ($P < 0.05$). The clinical treatment of 22 patients in the observation group was effective, accounting for 91.67%, and that of 17 patients in the control group was effective, accounting for 70.83%, which was statistically significant ($P < 0.05$). **Conclusions:** The effect of low-dose lyophilized recombinant human brain natriuretic peptide in the treatment of patients with severe heart failure complicated with hypotension after emergency PCI of acute anterior wall AMI is satisfactory, which is helpful to improve cardiac function and hypotension symptoms.

Keywords: Lyophilized recombinant human brain natriuretic peptide; Acute anterior wall AMI; PCI; Heart failure; Hypotension

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1. Introduction

As a critical disease, AMI refers to myocardial necrosis caused by persistent and acute ischemia and hypoxia of coronary artery. It is often complicated with heart failure and arrhythmia, which is life-threatening. The clinical symptoms of most patients are sudden onset, with squeezing pain or suffocation in the precordial area for more than 30 minutes. A few patients have symptoms such as palpitation, shortness of breath and fatigue before the onset of the disease. The precordial pain occurs first, mostly in the morning, during activity or rest [1,2]. PCI is often used in clinical treatment of AMI to dredge the coronary artery lumen with stenosis or occlusion and alleviate myocardial perfusion. However, this treatment has great potential safety hazards and is easy to cause various complications. In this regard, lyophilized recombinant human brain natriuretic peptide can improve cardiac function, but excessive can cause hypotension [3,4]. In view of this, this paper selects 48 patients with severe heart failure complicated with hypotension after emergency percutaneous coronary intervention (PCI) for acute anterior wall AMI from September 2020 to September 2021 as the research object. The patients are divided into two groups

and treated with different clinical methods respectively, and the improvement of various clinical indexes in the treatment is collected. To study the improvement effect of low-dose lyophilized recombinant human brain natriuretic peptide in clinical treatment, the detailed report is as follows.

2. Object and Method

2.1 Object

48 patients with severe heart failure complicated with hypotension after emergency percutaneous coronary intervention (PCI) for acute anterior wall AMI from September 2020 to September 2021 were included in the study. They were randomly divided into reference group and study group, with 24 cases in each group. In the reference group, there were 13 males and 11 females, aged 68-83 years, with an average of (74.26 ± 1.02) years. There were 12 males and 12 females in the study group, aged 68-84 years, with an average of (74.31 ± 1.04) years. There was no significant difference in the basic information of all patients ($P > 0.05$). The inclusion criteria were: 1) the diagnostic criteria of acute anterior wall AMI heart failure complicated with hypotension; 2) Voluntary participation in the study; 3) The medical ethics Association agreed with the study; 4) All patients underwent emergency PCI. Exclusion criteria: 1) history of drug allergy; 2) Unwilling to participate in research; 3) Patients with severe valve stenosis and liver and kidney dysfunction.

2.2 Method

The reference group was treated with general treatment. After PCI, anticoagulation and antiplatelet aggregation were performed. For the symptoms of hypotension, dopamine was applied by continuous intravenous pumping to control the blood pressure within a reasonable range, that is, the systolic blood pressure was not less than 90 mmHg and the diastolic blood pressure was not less than 60mmhg [5].

The study group was treated with low-dose lyophilized recombinant human brain natriuretic peptide on the basis of the reference group. On the premise of not using the load dose of lyophilized recombinant human brain natriuretic peptide, the lyophilized recombinant human brain natriuretic peptide (approval No.: gyzz s20050033, manufacturer: Chengdu nordikang biopharmaceutical Co., Ltd., specification: 0.5mg) was injected intravenously, and the blood pressure was 0.0013-0.0040 according to the specific blood pressure level of the patient μG/(kg·min^{-1}) was adjusted. Both groups were treated for 3 days [6].

2.3 Observation Indicators

Brain natriuretic peptide, blood pressure and left ventricular ejection fraction of the two groups before and after treatment [7]. 5mL venous blood was taken before and after treatment, brain natriuretic peptide was measured by immunoradiometry, left ventricular ejection fraction was checked by cardiac color Doppler ultrasound, and diastolic and systolic blood pressure were measured by professional instruments [8,9].

The improvement differences of clinical indexes under different treatment methods were compared, and the changes of clinical indexes before and 4 weeks after treatment were recorded. The improvement differences of left ventricular end diastolic diameter (LVEDd) and left ventricular end systolic diameter (LVESD) were recorded by cardiac color Doppler ultrasound [10].

The clinical efficacy of patients under different treatment methods was compared and evaluated by Killip standard. After treatment, the clinical symptoms of patients completely subsided, and the Killip grade of cardiac function was enhanced by 2 grades compared with that before treatment; After treatment, the clinical symptoms of the patients were partially improved, and the Killip grade of cardiac function was enhanced by 1 grade compared with that before treatment [11,12]. After treatment, the patient's clinical symptoms have not been improved, and the assessment of Killip cardiac function level has not been alleviated, which is invalid (total effective rate = significant effect + effective).

2.4 Statistical Analysis

The calculation software spss21.0 is used for analysis and comparison. The measurement data are represented by (x ± s), t shows that the result is $p < 0.05$, which proves that there is obvious difference [13,14].

3. Results

3.1 Comparison of Brain Natriuretic Peptide, Blood Pressure and Left Ventricular Ejection Fraction between the Two Groups before and after Treatment

Before treatment, there was no significant difference in brain natriuretic peptide, blood pressure and left ventricular ejection fraction between the study group and the reference group ($P > 0.05$). After treatment, the brain natriuretic peptide level in the study group was lower than that in the reference group, the left ventricular ejection fraction was higher than that in the reference group, and the systolic and diastolic blood pressure were higher than that in the reference group ($P < 0.05$). As shown in Table 1.

3.2 Compare the Improvement of Clinical Indicators under Different Treatment Methods

Before treatment, there was no significant difference in left ventricular end diastolic diameter and left ventricular end systolic diameter between the two groups (P > 0.05). After treatment, the overall improvement effect of LVEDd (50.43 ± 6.87) mm and LVESD (45.37 ± 7.16) mm in the observation group was better than that in the control group (P < 0.05), as shown in Table 2:

3.3 Compare the Clinical Efficacy of Patients under Different Treatment Methods

22 patients in the observation group were effective, accounting for 91.67%, and 17 patients in the control group were effective, accounting for 70.83%, which was statistically significant (P < 0.05). See Table 3:

Table 1. Comparison of brain natriuretic peptide, blood pressure and left ventricular ejection fraction between the two groups before and after treatment ($\bar{x}$ ±s)

Group	Number of cases	Brain natriuretic peptide (ng/mL)		Left ventricular ejection fraction (%)		Systolic pressure (mmHg)		Diastolic pressure (mmHg)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Research Group	24	1149.02±712.25	537.82±263.74	37.12±0.56	48.95±2.03	80.72±7.14	109.33±2.15	51.78±3.15	72.34±0.86
Reference group	24	1150.05±711.34	895.72±287.91	36.99±0.51	42.18±1.01	80.69±7.12	94.17±2.08	51.77±3.13	63.14±0.46
t	-	0.005	4.491	0.841	14.627	0.014	24.826	0.011	46.212
P	-	0.996	0.001	0.405	0.001	0.988	0.001	0.991	0.001

Table 2. Comparison of improvement differences of clinical indexes under different treatment methods ($\bar{x}$ ±s)

Group	Number of cases	LVEDD (mm)		LVESD (mm)	
		Before treatment	After treatment	Before treatment	After treatment
Observation group	24	68.13±9.45	50.43±6.87	56.43±7.55	45.37±7.16
Control group	24	68.22±9.07	58.96±7.92	56.52±7.68	53.26±6.59
t		0.034	3.986	0.041	3.972
P		0.973	0.000	0.968	0.000

Table 3. Comparison of clinical efficacy of patients under different treatment methods [cases, (%)]

Group	Number of cases	Remarkable effect	Effective	invalid	Total effective rate
Observation group	24	13 (54.17)	9 (37.50)	2 (8.33)	22 (91.67)
Control group	24	7 (29.17)	10 (41.67)	6 (25.00)	17 (70.83)
χ^2		12.857	0.364	14.254	14.254
P		0.000	0.547	0.000	0.000

4. Discussion

After the onset of AMI, various life indexes such as heart rate and blood pressure will change in varying degrees. In the early stage of the disease, because the myocardial perfusion is reduced and the oxygen supply is insufficient, the heart needs to improve the systemic blood supply to alleviate hypoxia, so there can be symptoms such as increased blood pressure and accelerated heartbeat. When the disease develops to the later stage, with the increase of the number of ischemic and necrotic myocardium and the continuous decline of cardiac function, heart failure can still occur even after PCI treatment [15,16]. Hypotension is a common complication after reperfusion in patients with acute myocardial infarction. Most patients show symptoms such as nausea and vomiting, pale complexion, bradycardia and sweating. Some patients with poor physical quality may have symptoms of cerebral hypoxia such as transient loss of consciousness. Nowadays, it is not clear in clinical treatment that the occurrence of hypotension after recanalization of arteries related to acute myocardial infarction and whether hypotension will affect the clinical efficacy and prognosis of patients. It is necessary to further track the long-term efficacy of patients in clinical treatment.

Brain natriuretic peptide is a B-type natriuretic peptide, which was first isolated from the pig brain. It comes from the ventricle and is synthesized and secreted by ventricular myocytes. Therefore, the changes of ventricular load and ventricular wall tension are of great significance for brain natriuretic peptide secretion [17]. It is an important synthetic vasodilator, which can regulate blood pressure, water salt balance and blood volume with cardiac natriuretic peptide, improve glomerular filtration rate and expand blood vessels, so as to reduce systemic vascular resistance and plasma volume and protect cardiac function [18]. Heart failure patients with acute anterior wall AMI after emergency PCI are complicated with hypotension because their myocardium has been seriously damaged and their blood pressure is generally lower than normal. The main component of lyophilized recombinant human brain natriuretic peptide is recombinant human brain natriuretic peptide. Human brain natriuretic peptide can bind to specific sodium peptide receptors, increase the concentration of cyclic guanosine monophosphate in cells, promote the relaxation of smooth muscle cells, quickly reduce systemic arterial pressure and pulmonary capillary wedge pressure, reduce cardiac load and alleviate heart failure related symptoms, such as dyspnea [19]. It should be noted that the blood pressure changes of patients must be strictly monitored during treatment. In case of hypotension, the dosage should be reduced or the medication should be stopped immediately [20]. Therefore, it is best to take a small dose of lyophilized recombinant human brain natriuretic peptide in the treatment of heart failure after emergency PCI in patients with acute anterior wall AMI to prevent adverse reactions. In this study, the brain natriuretic peptide, blood pressure and left ventricular ejection fraction of the study group after treatment were better than those of the reference group, indicating that low-dose lyophilized recombinant human brain natriuretic peptide has clinical application value.

In conclusion, the effect of low-dose lyophilized recombinant human brain natriuretic peptide in the treatment of patients with severe heart failure complicated with hypotension after emergency PCI of acute anterior wall AMI is satisfactory, which is helpful to improve cardiac function and hypotension symptoms.

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