



Research Progress on the Prevention of Chemical Phlebitis by Using Chinese Herbal Medicines Containing Rhubarb Components

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Article Info

ISSN (online): 2582-8940

Volume: 06

Issue: 04

October-December 2025

Received: 28-08-2025

Accepted: 30-09-2025

Published: 24-10-2025

Page No: 68-70

Abstract

One of the most common complications of intravenous infusion is phlebitis. The occurrence of phlebitis is one of the most common complications of intravenous infusion. The occurrence of chemical phlebitis is closely related to the mechanical and chemical effects of the infused liquid. In recent years, with the continuous development of traditional Chinese medicine, Chinese scholars have conducted a large amount of research on the prevention and treatment of phlebitis, and have achieved good results in clinical practice by using self-formulated formulas for the prevention and treatment of phlebitis. This article, based on clinical and related literature from traditional Chinese medicine, reviews the formulas and clinical efficacy of external application of rhubarb-type Chinese herbs for the prevention and treatment of phlebitis caused by intravenous infusion in recent years.

DOI: <https://doi.org/10.54660/IJMBHR.2025.6.4.68-70>

Keywords: Rhubarb, Chemical Phlebitis, Research Progress

1. Introduction

Intravenous infusion is a commonly used route for drug administration and nutritional support in clinical practice, featuring rapid drug efficacy and high oxygen utilization ^[1]. However, intravenous infusion is also prone to complications, among which chemical phlebitis (infusion phlebitis, IP) is the most common. Studies have shown that the incidence of chemical phlebitis in clinical settings reaches 40-80%, which is far higher than the standard of less than 5% stipulated by the American Society of Infusion Nurses (INS) guidelines. Phlebitis not only increases the physical pain and treatment costs of patients, but also prolongs the treatment time, increases the workload of nursing, and may even lead to serious complications such as sepsis and deep vein thrombosis. Therefore, it is of great significance to prevent and treat the occurrence of phlebitis. In recent years, with the continuous development of traditional Chinese medicine, Chinese scholars have conducted extensive research on the prevention and treatment of phlebitis, and have achieved good results in clinical practice by using self-formulated prescriptions for prevention and treatment of phlebitis. The following is a summary of the formulas and clinical efficacy of external application of rhubarb-type Chinese herbs for the prevention and treatment of phlebitis caused by intravenous infusion in recent years.

2. The Pathogenesis of venous inflammation in traditional Chinese medicine

Based on the clinical manifestations of venous inflammation, it falls under the categories of "evil meridians", "meridian insufficiency", "green toxins and snakes" in traditional Chinese medicine. The "Emergency Thousand Gold Essentials" states, "For evil meridians, suddenly there are red blood vessels rising like worms in the body, and the skin suddenly swells and becomes narrow and red, causing pain." Traditional Chinese medicine holds that the main causes of venous inflammation are puncture injuries and the damage to the body caused by pungent and hot drugs, resulting in pain, swelling, fever, and redness. When qi and blood flow is not smooth, the skin becomes congested, and the circulation of body fluids is blocked, causing swelling; when heat accumulates and stasis of blood forms internally, local areas become hot; when the meridians are damaged and blood spills onto the skin or there is internal accumulation of heat, the local area becomes red; when the blood flow in the meridians is not

smooth and blood stasis is obstructed, pain occurs when there is no circulation [12]. According to its pathogenesis, treatment mainly involves clearing heat and detoxifying, promoting blood circulation, eliminating stasis, reducing swelling, and relieving pain.

3. Cooling Blood and Relieving Pain Ointment for the Prevention and Treatment of Chemical Phlebitis

A study used the self-made cooling blood and relieving pain ointment for external application to treat grade III phlebitis. The experimental results showed that it could effectively treat phlebitis. The cooling blood and relieving pain ointment has the effect of reducing swelling. It is a new formulation based on Ruyi Golden Powder. The ingredients include 10g each of safflower, cattail pollen, and borneol, 50g each of yellow root, cypress bark, raw rhubarb, and raw gardenia, 30g each of dried ginger, white peony, tuberous arum, and privet bark, and 30g of processed frankincense and myrrh [13].

4. Three Types of yellow decoctions (three yellow, four yellow, and five yellow) are used to prevent chemical-induced phlebitis

The ingredients of the three yellow decoctions include rhubarb, astragalus, and cimicifuga. These ingredients are also the basic components of many self-prepared medicines [14]. A study mixed rhubarb, scutellaria baicalensis, and cimicifuga in a 2:1:1 ratio into fine powder, formed a paste, and applied it to the affected areas of patients in the observation group after the chemotherapy drugs were infused. The dressing was left on for 24 hours, changed twice a day, and continued for 7 days. The control group received no treatment. The results showed that the proportion of patients with phlebitis in the observation group was significantly lower than that in the control group (8.3% vs. 71.6%). Another study combined the three-yellow decoction with one more herb, gardenia, to form the four-yellow decoction for the treatment of acute phlebitis. The experiment demonstrated that the four yellow decoctions had a better therapeutic effect on phlebitis. Some researchers also explored the treatment of infusion-related venous inflammation with the four yellow honey paste. They mixed rhubarb, scutellaria baicalensis, cimicifuga, and cinnamon with honey to form a paste and applied it to the affected areas of patients in the treatment group. The control group used magnesium sulfate for wet dressing. The experimental results showed that the treatment group had a good clinical effect. In the clinical experiments, adding one more herb or reducing one herb to the four yellow honey paste to form the five-yellow paste for the treatment of chemical-induced phlebitis also achieved success. In many studies of self-prepared medicines, one or more herbs were added or reduced to the three-yellow decoction, such as the astragalus and rhubarb plaster formula, which removed rhubarb and added camphor and borax, and the pulse-protecting plaster, which removed astragalus and added cinnamon and raw aluminous stone. Experimental studies have shown that all of these can effectively treat phlebitis.

5. Qingfu Ointment for the Prevention of Chemical Phlebitis

Some researchers started using Qingfu Ointment immediately when the observation group's first use of mannitol occurred. The ointment was applied above the blood vessel where the indwelling needle was located and was changed once a day. The control group received routine care.

The results showed that Qingfu Ointment could effectively reduce the incidence of phlebitis caused by mannitol. Qingfu Ointment has the effects of clearing heat, detoxifying, promoting blood circulation, and resolving stasis. Its main ingredients include cypress bark, blue vitriol, rhubarb, astragalus, pollen, white laba, white peony, and turmeric. Qingfu Ointment not only effectively prevents chemical phlebitis but also plays a therapeutic role in treating phlebitis.

6. Self-Made Abscess and Boil Reducing Ointment for the Prevention and Treatment of Chemical Venous

Formulation of Abscess and Boil Reducing Ointment : 30g each of white peony, saussurea, rhubarb, and phlox, 50g of loquat root, 15g each of 川芎 · nantongizi, and chuanxiong. After grinding into powder, add 15mL of pine resin oil and 70mL of vaseline to make a paste. A study applied the Abscess and Boil Reducing Ointment to the affected areas of the patients in the observation group, while the control group used 50% magnesium sulfate solution for wet dressing. The occurrence of venous inflammation was compared between the two groups. The results showed that the incidence of venous inflammation and the incidence of pain in the observation group were both lower than those in the control group. Research indicates that the Abscess and Boil Reducing Ointment can effectively prevent venous inflammation.

7. The Formula "Xuehuatongluo Decoction" and "Wenjing Huatong Powder" for preventing and treating chemical-induced phlebitis

Some researchers conducted experiments where the treatment group applied the "Xuehuatongluo Decoction" continuously to the affected area, while the control group used 50% magnesium sulfate for wet heat application. The results showed that "Xuehuatongluo Decoction" was more effective in treating phlebitis than magnesium sulfate. The composition of the "Xuehuatongluo Decoction" formula: 10g of rhubarb, 0.5g of borneol, 12g of Angelica sinensis, 20 g each of Angelica sinensis, sulphate of sodium, and Scrophularia ningpoensis, 15 g of Gardenia jasminoides, and 50 mL of 50% ethanol was added. Some researchers also formulated their own "Wenjing Huatong Powder" (composed of Angelica sinensis, Paeonia lactiflora, Aconitum carmichaelii, Angelica dahurica, Rheum palmatum, Commiphora myrrha, and Coptis chinensis, mixed with honey to form a paste) for treating phlebitis caused by indwelling needles, and the clinical treatment effect was remarkable.

8. Gold Ointment for preventing chemical phlebitis

The ingredients of the gold ointment include 30g each of Aconitum, Perilla, Atractylodes, Magnolia officinalis, and Licorice; 75g each of Rhubarb, Coptis chinensis, Curcuma longa, and Angelica dahurica; and 150g of Gastrodia elata. After grinding, it is mixed with 500g of Vaseline to form the gold ointment. Some researchers used this formula to treat patients with phlebitis caused by anesthetic drugs. The efficiency of the obvious effect (80.0%) and the total effect (97.7%) of the observation group treated with the gold ointment were better than those of the control group treated with 50% magnesium sulfate (40.0% and 90%), and the experiment showed that the gold ointment has a good clinical efficacy in treating phlebitis.

9. Tongmai Ointment for the Prevention and Treatment of Chemical Phlebitis

The ingredients of Tongmai Ointment include: 50g of Gardenia, 50g each of Trichosanthes, Scutellaria baicalensis, Rhubarb, and Coptis chinensis; 30g each of Rhizoma Galangae, Angelica sinensis, Atractylodes lancea, and Zhejiang Fritillary Bulb; 15g of Coptis chinensis; 10g each of Menthol and Peppermint; after grinding, add 50mL of fresh Aloe vera juice and an appropriate amount of honey to form a paste. Some researchers believe that Tongmai Ointment is a pure Chinese herbal topical ointment developed based on the pathogenic mechanism of phlebitis, which has the effects of improving the microcirculation of the lesion, rapidly reducing swelling, and effectively relieving pain. Experimental results show that Tongmai Ointment has a significant therapeutic effect on iatrogenic phlebitis and is worthy of recommendation for use.

10. Conclusion

How to effectively prevent and treat chemical phlebitis has always been a clinical issue of concern for nursing staff. For the care of phlebitis, active preventive measures should be given as early as possible, which can significantly reduce its incidence rate. Therefore, clinical nurses, on the basis of fully recognizing the relevant factors causing phlebitis in patients during intravenous infusion, should actively prevent the occurrence of phlebitis. Once phlebitis occurs, medical staff also need to take corresponding treatments based on the actual situation. The use of a traditional Chinese medicine formula for external application to treat phlebitis is a characteristic treatment method of traditional Chinese medicine, which is simple to operate, economical and practical, and easily accepted by patients. However, the external application of traditional Chinese medicine is mostly empirical clinical medication, mostly clinical research, lacking experimental basis and mechanism research. It is worthy of further exploration by scholars. Traditional Chinese medicine culture has a long history. How to make good use of the wisdom of traditional Chinese medicine and combine it with modern nursing to improve the development of Chinese nursing requires the joint efforts of every nursing practitioner and researcher.

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How to Cite This Article

Tong C. Research progress on the prevention of chemical phlebitis by using Chinese herbal medicines containing rhubarb components. Int J Med Biomed Health Res. 2025;6(4):68-70. doi:10.54660/IJMBHR.2025.6.4.68-70

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