

Clinical Efficacy of Combined Traditional Chinese and Western Medicine with Hyperbaric Oxygen Therapy in Acute Herpes Zoster: An Observational Study

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Abstract: *Objective:* To investigate the efficacy and clinical application value of combined traditional Chinese and Western medicine with hyperbaric oxygen (HBO) therapy in the treatment of acute herpes zoster. *Methods:* A total of 52 patients with acute herpes zoster treated at our institution were enrolled and randomly assigned to an observation group ($n = 27$) and a control group ($n = 25$). Both groups received combined traditional Chinese and Western medicine therapy, while the observation group received adjunctive HBO therapy. Recovery speed and therapeutic efficacy were compared between the two groups. *Results:* The recovery rate was 72% in the observation group versus 37% in the control group, with a statistically significant difference ($P < 0.05$). However, no significant difference was observed in the overall effectiveness rate between the two groups ($P > 0.05$). Compared with the control group, the observation group demonstrated significantly faster pain relief and earlier resolution of vesicular lesions ($P < 0.05$). *Conclusion:* The combination of traditional Chinese and Western medicine with HBO therapy provides substantial pain relief, promotes earlier crusting of skin lesions, and exhibits a favorable safety profile in acute herpes zoster, warranting broader clinical adoption.

Keywords: Hyperbaric oxygen; Jidesheng sheyao tablet; Herpes zoster

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1. Introduction

Herpes zoster is a typical infectious dermatosis. Modern medical research indicates that its pathogenesis involves the reactivation of varicella-zoster virus (VZV) in the ganglia following a decline in host immunity, leading to neural inflammation and segmental cutaneous lesions with associated neuropathic pain. The disease course typically spans 7-10 days, but some patients experience prolonged pain lasting at least one month, a condition known as postherpetic neuralgia (PHN)^[1]. Studies have shown that approximately 15%

of herpes zoster patients develop PHN, with the incidence increasing to 75% among those aged over 70 years^[2]. Given the rising incidence of herpes zoster and the poor therapeutic outcomes of PHN, treatment during the acute phase is of paramount importance.

Hyperbaric oxygen (HBO) therapy has garnered increasing attention and recognition in the field of neurology^[3]. Topical application of Jidesheng Sheyao tablet has been shown to exert both anti-VZV effects and attenuation of neuroinflammation, demonstrating favorable therapeutic outcomes in acute herpes zoster^[4]. The present study investigated the combination of traditional Chinese and Western medicine with HBO therapy in this patient population, aiming to accelerate recovery and address the aforementioned clinical challenges. The detailed findings are reported below.

2. Subjects and methods

2.1. General data

A total of 57 patients with acute herpes zoster treated at our hospital from January to December 2021 were initially considered. Of these, 24 were male and 33 were female, with ages ranging from 27 to 75 years. All enrolled patients presented with unilateral clustered erythema and vesicles, accompanied by prominent neuralgia, and had not received glucocorticoid or anti-infective therapy within one week of symptom onset. Exclusion criteria included: (1) pregnancy or lactation; (2) severe organ dysfunction or inability to communicate normally; (3) concurrent autoimmune diseases or long-term use of corticosteroids or immunosuppressants; (4) malignant neoplasms; (5) concurrent use of tricyclic antidepressants, central analgesics, or preexisting pain disorders or depressive conditions; (6) special types of herpes zoster (e.g., visceral, meningeal, disseminated, or zoster sine herpette); (7) contraindications to HBO therapy (e.g., glaucoma, retinal detachment, pneumothorax, pulmonary emphysema); and (8) allergy to study medications.

2.2. Methods

Following strict application of inclusion and exclusion criteria, 52 patients were enrolled and randomly assigned to two groups: the observation group (combined traditional Chinese and Western medicine + HBO, $n = 27$) and the control group (combined traditional Chinese and Western medicine alone, $n = 25$). No statistically significant differences in baseline characteristics were observed between the two groups.

Combined traditional Chinese and Western medicine regimen: Vidarabine monophosphate injection 0.4 g once daily, valaciclovir tablets 0.3 g twice daily, and pregabalin capsules 75 mg twice daily, all administered for 7 consecutive days. Jidesheng Sheyao tablets were applied topically: 8–10 tablets were ground into powder and mixed with warm water to form a paste for a wet compress on the affected area (for ruptured vesicles, dry powder was applied directly), twice daily.

HBO therapy regimen: Treatment was delivered in a multiplace hyperbaric air compression chamber. Chamber pressure was raised to 0.2 MPa within 30 minutes. Patients breathed 100% oxygen via face mask for 30 minutes, followed by a 5-minute break breathing compressed air, and then a second 30-minute oxygen breathing session. Decompression to ambient pressure was performed over 20 minutes. The procedure was conducted once daily for 10 consecutive days.

2.3. Outcome measures

Visual Analog Scale (VAS) scores were recorded to assess pain intensity. Time to pain relief, vesicle

cessation, and crusting were documented. Pain levels were measured after 10 days of treatment, along with parameters related to vesicle resolution and crust formation.

2.4. Efficacy criteria

Efficacy was evaluated according to the Criteria for Diagnosis and Therapeutic Efficacy of Traditional Chinese Medicine Syndromes^[5]. Recovery: complete resolution of symptoms with essentially normal status; Improvement: $\geq 30\%$ reduction in rash area with substantial pain relief compared with baseline; No response: $< 30\%$ reduction in rash area with persistent pain.

2.5. Statistical analysis

Continuous data are expressed as mean $\pm$ standard deviation ($\bar{x} \pm s$). Categorical data were compared using the chi-square test. Intergroup comparisons of means were performed using independent-samples t-tests with SPSS software. A P -value < 0.05 was considered statistically significant.

3. Results

3.1. Comparison of efficacy rates

The recovery rate in the observation group was significantly higher than that in the control group ($P < 0.05$), whereas the overall effective rate did not differ significantly between groups ($P > 0.05$) (Table 1).

Table 1. Comparison of therapeutic efficacy between the two groups (n)

Group	n	Recovery	Improvement	No response	Recovery rate (%)	Overall effective rate (%)
Control	25	10	14	3	37	89
Observation	27	18	6	1	72 ^a	96 ^b

Note: Compared with the control group, ^a $P < 0.05$, ^b $P > 0.05$

3.2. Time to pain relief

The observation group experienced significantly earlier onset of pain relief compared with the control group ($P < 0.05$) (Table 2).

Table 2. Comparison of time of pain relief between the two groups (days, mean $\pm$ SD)

Group	n	Time to pain relief
Control	25	3.77 $\pm$ 0.97
Observation	27	3.21 $\pm$ 0.92
<i>t</i> -value		1.755
<i>P</i> -value		0.038

3.3. Pain Intensity (VAS) before and after treatment

No significant difference in baseline VAS scores was observed between the two groups. After one course of treatment, the VAS score in the observation group was significantly lower than that in the control group (Table 3).

Table 3. Pain intensity before and after one treatment course (VAS score, mean $\pm$ SD)

Group	n	Pre-treatment VAS	Post-treatment VAS
Control	25	7.62 $\pm$ 1.21	3.31 $\pm$ 0.53
Observation	27	7.69 $\pm$ 1.24	2.93 $\pm$ 0.62
<i>t</i> -value		0.206	2.367
<i>P</i> -value		0.838	0.022

3.4. Time to Vesicle Cessation and Crusting

The observation group demonstrated significantly shorter times to vesicle cessation and crusting compared with the control group ($P < 0.05$) (Table 4).

Table 4. Comparison of time to vesicle cessation and crusting between the two groups (days, mean $\pm$ SD)

Group	n	Time to vesicle cessation	Time to crusting
Control	25	3.42 $\pm$ 0.87	5.32 $\pm$ 1.01
Observation	27	2.37 $\pm$ 0.94	4.59 $\pm$ 1.03
<i>t</i> -value		4.171	2.578
<i>P</i> -value		< 0.001	0.013

3.5. Adverse reactions

Among the 27 patients receiving HBO therapy, only 2 experienced mild discomfort during decompression, which was tolerable and required no specific intervention. No other HBO-related adverse events (e.g., barotrauma, oxygen toxicity, decompression sickness, atelectasis, metabolic or acid–base disturbances) were observed. The incidence of adverse reactions did not differ significantly between the two groups.

4. Discussion

VZV infection readily induces inflammatory responses in ganglionic neurons, resulting in edema and neuralgia. Rapid pain control is a primary therapeutic goal in managing these patients [6]. Prior research on herpes zoster neuralgia has largely focused on “neurotrophic” approaches [7], often overlooking the neural damage induced by inflammation itself. The present study adopted “neuritis” as a therapeutic target, exploring a strategy of “promoting neural repair, intensifying medical therapy for neuritis, and alleviating pathological pain.” Literature evidence supports the efficacy of HBO combined with pharmacotherapy for herpes zoster [8]. Yang et al. reported that HBO combination therapy shortened skin lesion healing time and provided greater pain relief within the same timeframe [9]. These findings suggest that the mechanism of HBO in herpes zoster may involve reversal of sensory nerve injury; however, whether this intervention mitigates early neural damage or promotes late-stage healing remains to be clarified.

Pathologically, VZV infection induces inflammatory edema and hemorrhagic changes in both cutaneous and neural tissues [10]. Although studies specifically addressing HBO’s effect on skin and neural inflammation in herpes zoster are limited, the proposed mechanisms include: (1) HBO elevates tissue oxygen partial pressure by more than 20-fold in skin and nerves, enhancing aerobic metabolism to facilitate tissue repair; (2) HBO constricts superficial dermal and epidermal vessels, reducing capillary exudation and thereby attenuating inflammatory irritation of cutaneous nerve endings, thus alleviating pain and abnormal sensations

^[11] ; (3) sustained HBO therapy improves tissue oxygenation, promotes neuronal survival, and accelerates proximal nerve sprouting ^[12], which is of therapeutic significance for both acute and chronic pain ^[13-14] ; (4) HBO suppresses viral replication and reactivation, aiding in viral clearance from the bloodstream ^[15], thereby exerting antiviral and anti-inflammatory effects from a pathophysiological perspective. Our study found that both treatment regimens reduced pain scores, confirming their overall efficacy. However, the HBO group achieved greater pain reduction than the control group, validating the additive analgesic effect of HBO in herpes zoster neuralgia, consistent with previous reports on HBO in pathological pain management. When combined with antiviral, neurotrophic, and analgesic agents, HBO produced synergistic therapeutic benefits.

In addition to analgesia, promoting rapid vesicular drying and crusting is another key objective. Topical application of Jidesheng Sheyao tablet delivers the active components directly to the lesion site, exerting regulatory effects on meridians and viscera while improving local blood circulation. Experimental evidence has demonstrated that Jidesheng Sheyao exhibits low cytotoxicity and potent anti-VZV activity. Furthermore, it has been shown to alleviate neural edema and inhibit neuroinflammation and pain, supporting its significant role in herpes zoster management.

5. Conclusion

In summary, combination therapy should be considered a routine approach and is regarded as one of the most promising strategies for herpes zoster. Reports on such combined regimens in western China remain scarce. The combination of HBO with traditional Chinese and Western medicine for acute herpes zoster demonstrates marked efficacy, favorable safety, minimal impact on patients' daily life, and good acceptability, warranting broader clinical promotion. Nevertheless, the sample size of this study is relatively small, and future investigations with larger cohorts and extended follow-up are needed to assess the impact of combined therapy on postherpetic sequelae.

Disclosure statement

The authors declare no conflict of interest.

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