Experience Analysis of Qingqiao Dingxuan Decoction in Treating Residual Symptoms after Canalith Repositioning

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Abstract [**Objectives**] To investigate the efficacy and safety of the self-formulated Qingqiao Dingxuan Decoction in treating residual symptoms after canalith repositioning and to summarize the experience of TCM pattern differentiation. [**Methods**] Sixty patients with residual symptoms after successful canalith repositioning were selected from August 2023 to July 2025 and randomly divided into a treatment group and a control group, with 30 patients in each group. The treatment group received orally administered self-formulated Qingqiao Dingxuan Decoction, while the control group received orally administered Betahistine Mesilate Tablets. The Dizziness Assessment Rating Scale (DARS) scores, recurrence rate, and safety were compared between the two groups before and after treatment. [**Results**] At the 14-d post-treatment assessment and the 1-month follow-up, the DARS scores of both groups were significantly lower than before treatment. Furthermore, the scores of the treatment group were consistently lower than those of the control group, with statistically significant differences ($P < 0.05$). The recurrence rate was 0% in the treatment group and 3.33% in the control group. No serious adverse events occurred in either group. [**Conclusions**] Qingqiao Dingxuan Decoction demonstrates definite efficacy and good safety in treating residual symptoms after canalith repositioning. It can effectively improve vertigo symptoms and promote vestibular function recovery.

Key words Qingqiao Dingxuan Decoction, Residual symptoms after canalith repositioning, Phlegm-stasis obstructing orifices

1 Introduction

Benign paroxysmal positional vertigo (BPPV), is one of the most common peripheral vestibular disorders causing vertigo in clinical practice. Canalith repositioning maneuvers (CRMs) are currently the recognized first-line treatment, capable of rapidly relocating the displaced otoconia (ear crystals) and effectively alleviating the characteristic paroxysmal, rotatory vertigo. However, clinical practice reveals that approximately 30% - 60% of patients still experience a constellation of residual symptoms after successful repositioning[1], including dizziness, lightheadedness, blurred vision, and unsteadiness while walking (residual dizziness). These symptoms can persist for days to weeks, significantly impairing the patient's quality of daily life and work capacity.

Currently, modern medical approaches to treating residual symptoms after repositioning primarily include pharmacotherapy, vestibular rehabilitation training, and psychological intervention. Commonly used clinical medications include betahistine monotherapy, or betahistine combined with Deanxit (flupentixol/melitracen) or vitamin D, *etc.*[2] Vestibular rehabilitation training promotes vestibular compensation through repeated provocation of vertiginous stimuli, aiming to improve postural stability and reduce imbalance. However, long-term use of antihistamines or psychotropic drugs carries risks of dependency and numerous adverse effects. Rehabilitation exercises, requiring sustained long-term commitment, often suffer from poor patient adherence, making consistent clinical efficacy difficult to guarantee. Traditional Chinese Medicine (TCM) emphasizes a holistic concept and pattern differentiation-based treatment. It not only aims to alleviate residual vertigo symptoms but also addresses accompanying systemic discomforts, targeting both the manifestations (branches) and the root cause. Therefore, in-depth exploration of the clinical value of TCM in treating residual symptoms after canalith repositioning holds significant importance.

2 Materials and methods

2.1 General data Sixty patients presenting with residual symptoms after successful canalith repositioning at the Affiliated Hospital of Changzhi Academy of Traditional Chinese Medicine Research were selected as study participants between August 2023 and July 2025. All patients met the diagnostic criteria for BPPV and had persistent residual symptoms despite successful repositioning maneuvers. Patients were divided into a treatment group and a control group using a random number table, with 30 patients in each group. There were no statistically significant differences ($P > 0.05$) in baseline characteristics such as gender, age, and disease duration between the two groups, indicating comparability.

2.2 Case selection criteria

2.2.1 Inclusion criteria. (i) Meeting the diagnostic criteria outlined in the *Diagnostic Criteria for Benign Paroxysmal Positional Vertigo* for a definitive diagnosis; (ii) Presence of residual vertigo symptoms after undergoing canalith repositioning maneuvers; (iii) TCM pattern differentiation confirming the pattern of Phlegm-Stasis Obstructing the Orifices; (iv) Provision of informed consent and voluntary participation in the study.

2.2.2 Exclusion criteria. (i) Coexistence of other vertigo-related disorders (*e.g.*, Ménière's disease, vestibular neuritis, central vertigo, *etc.*); (ii) Presence of severe cardiac, hepatic, renal, or other organ dysfunction; (iii) Psychiatric disorders or inability to cooperate with the treatment; (iv) Pregnancy or lactation.

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2.3 Methods

2.3.1 Treatment group. Patients received oral administration of the self-formulated Qingqiao Dingxuan Decoction. Formula composition: Rhizoma Chuanxiong 20 g, Gastrodiae Rhizoma 12 g, Pinelliae Rhizoma Praeparatum 10 g, Atractylodis Macrocephalae Rhizoma Praeparatum 10 g, Alismatis Rhizoma 15 g, Acori Tatarinowii Rhizoma 10 g, Poria 10 g, Bombyx Batryticatus 10 g, Draconis Os 30 g, Ostreae Concha 30 g, Puerariae Lobatae Radix 10 g. The herbal decoction pieces were provided by the TCM pharmacy of the Affiliated Hospital of Changzhi Academy of Traditional Chinese Medicine Research. One dose was administered daily. The herbs were decocted in water to yield 200 mL of liquid, which was taken warm on an empty stomach, once in the morning and once in the evening. Seven days constituted one treatment course, and patients received two consecutive courses.

2.3.2 Control group. Patients received oral administration of Betahistine Mesilate Tablets [Eisai (China) Pharmaceutical Co., Ltd., National Drug Approval No.: H20040130, Specification: 6 mg/tablet], 6 mg per dose, three times daily. Seven days constituted one treatment course, and patients received two consecutive courses.

2.4 Observation indices (i) Dizziness Assessment Rating Scale: The Dizziness Assessment Rating Scale (DARS) was used to evaluate the severity of vertigo in patients treatment, 14 d after treatment initiation, and one month after treatment initiation. (ii) Recurrence Rate: Patients were followed up three months after completing treatment to record recurrence in both groups. (iii) Safety Evaluation: Adverse reactions and adverse events occurring during the treatment period were observed and recorded for both groups.

3 Results and analysis

3.1 Comparison of Dizziness Assessment Rating Scale (DARS) Before treatment, there was no statistically significant difference in DARS scores between the two groups ($t = -0.40$, $P = 0.968 > 0.05$), confirming baseline comparability. After 14 d of treatment, the DARS scores of both groups were significantly reduced compared to pre-treatment levels ($P < 0.05$). Moreover, the score in the treatment group was lower than that in the control group, with a statistically significant difference ($t = -3.173$, $P = 0.002 < 0.05$). At the one-month follow-up, DARS scores in both groups showed further reduction. The improvement in the treatment group was superior to that of the control group, with a statistically significant difference ($Z = -4.108$, $P = 0.000 < 0.05$). See Table 1.

3.2 Comparison of recurrence rate At the three-month follow-up after treatment completion, there were 0 cases of recurrence in the treatment group, yielding a recurrence rate of 0%. In the control group, there was 1 case of recurrence, yielding a recurrence rate of 3.33%. The difference in recurrence rates between the two groups was not statistically significant ($P > 0.05$).

Table 1 Comparison of Dizziness Assessment Rating Scale (DARS) scores between the two groups before and after treatment

($\bar{x} \pm s$, $n = 30$, points)

Group	Before treatment	14 days after treatment	1 month after treatment
Treatment	21.50 ± 6.437	7.73 ± 4.008 *△	1.37 ± 1.564 *△
Control	21.43 ± 6.399	10.73 ± 3.279 *	3.40 ± 1.940 *

NOTE * $P < 0.05$ compared with before treatment within the same group; △ $P < 0.05$ compared with the control group at the same time point.

3.3 Safety evaluation During the treatment period and the subsequent follow-up, routine blood tests, liver and kidney function tests, and other safety indicators showed no significant abnormalities in either group. No serious adverse events occurred. These findings suggest that both treatment regimens exhibited good safety profiles.

4 Discussion

The core pathomechanism of BPPV is currently understood as the detachment of otoconia (tiny calcium carbonate crystals within the inner ear) from their normal location and their displacement into the semicircular canals. This displacement abnormally stimulates the hair cells within the canals, triggering brief but intense episodes of paroxysmal vertigo[3]. The pathogenesis of residual symptoms after successful repositioning is complex and may involve multiple factors. These include transient functional impairment of the vestibular system due to the repositioning maneuvers or the disease process itself, localized microcirculatory disturbances in the inner ear, secondary mild inflammatory reactions, and incomplete central vestibular compensation.

Within the theoretical framework of TCM, while there is no specific disease name equivalent to "BPPV", its core clinical manifestation of vertigo allows it to be categorized under the broader syndrome of "Xuan Yun" (vertigo/dizziness). Based on extensive clinical observation in our department, the TCM pattern "Phlegm-Stasis Obstructing the Orifices" is the most frequently encountered pattern among patients with residual symptoms after canalith repositioning. Ancient medical texts extensively discuss this pattern. For instance, the *Danxi's Experiential Therapy* (*Danxi Xinfa*) states in the section on Head Vertigo: "Head vertigo arises from phlegm combined with qi deficiency and fire; treatment should focus on resolving phlegm. Without phlegm, vertigo does not occur." *The Golden Mirror of Medicine* (*Yizong Jinjian*) similarly asserts: "Vertigo is caused by phlegm stirred by fire; indeed, without phlegm, vertigo does not occur."[4] These classical statements emphasize the pivotal role of "phlegm" in the pathogenesis of vertigo. Considering modern lifestyles characterized by diets rich in greasy, sweet, and heavy foods, coupled with insufficient physical exercise and significant mental stress, these factors readily lead to liver qi stagnation and disruption of qi dynamics. Liver qi stagnation impairs spleen function, leading to compromised transportation and transformation by the spleen and stomach. This results in internal accumulation of water-dampness,

which congeals to form phlegm. Qi stagnation, in turn, impedes the smooth flow of blood, leading to blood stasis over time. Phlegm-turbidity and static blood mutually bind and ascend to cloud the clear orifices. This obstructs the ascent of clear yang and deprives the brain orifices of nourishment, thereby giving rise to vertigo[5]. Although the displaced otoconia are mechanically repositioned, the underlying pathological foundation of "phlegm and stasis" remains unresolved. The brain orifices and collaterals remain obstructed, preventing qi and blood from ascending to nourish them adequately. This constitutes the TCM pathomechanism explaining the lingering and refractory nature of the residual symptoms.

Based on this understanding of the "Phlegm-Stasis Obstructing the Orifices" pathomechanism, our department formulated the Qingqiao Dingxuan Decoction. Its therapeutic principles are to resolve phlegm and dispel dampness, activate blood circulation and dissipate stasis, and open the orifices to settle vertigo. In the formula: Rhizoma Chuanxiong is acrid, dispersing, and warm in nature, excelling at activating blood circulation, moving qi, dispelling wind, and relieving pain. It ascends to the head and eyes, facilitating the free flow of qi and blood. Gastrodiae Rhizoma is sweet and neutral, moist in quality, and renowned for pacifying the liver, extinguishing wind, and settling vertigo to stop dizziness. It is a key medicinal for treating vertigo. These two herbs serve as the Monarch (Jun) agents, mutually reinforcing each other to achieve the effects of activating blood circulation, freeing the collaterals, pacifying the liver, and settling vertigo. Pinelliae Rhizoma Praeparatum dries dampness, transforms phlegm, lowers counterflow, and harmonizes the stomach. Atractylodis Macrocephalae Rhizoma Praeparatum fortifies the spleen, boosts qi, dries dampness, and promotes urination, thereby addressing the source of phlegm production. Gastrodiae Rhizoma disinhibits water and leaches out dampness, guiding the pathogens of phlegm-dampness out via the urine[6]. These three herbs act as the Minister (Chen) agents. Acori Tatarinowii Rhizoma is aromatic, opens the orifices, transforms dampness, and harmonizes the stomach. *Poria* fortifies the spleen, calms the spirit (heart), and seeps out dampness by promoting urination. Draconis Os and Ostreae Concha heavily settle and subdue yang while calming the spirit and stabilizing the mind. Bombyx Batryticatus extinguishes wind and frees the collateral network[7]. These four herbs serve as Assistant (Zuo) agents. Puerariae Lobatae Radix raises and emits the clear yang qi of the spleen and stomach, guiding the other medicinals upwards directly to the affected region in the head and face, acting as the Envoy (Shi) agent. The combination of all herbs in this formula works synergistically to achieve the functions of transforming phlegm and dispelling dampness, activating blood circulation and freeing the orifices, settling vertigo, and calming the spirit.

The results of this study show that the post-treatment DARS scores in the treatment group were significantly lower than those in the control group. Furthermore, the advantage in improvement became even more pronounced at the one-month follow-up. This suggests that Qingqiao Dingxuan Decoction can effectively ameliorate residual symptoms after canalith repositioning and promote vestibular function repair and compensation. Modern pharmacological research indicates that herbs within the formula, such as *R. Chuanxiong* and *G. Rhizoma*, possess multiple actions including improving inner ear microcirculation, modulating central neurotransmitters, and exerting anti-inflammatory and antioxidant effects[8]. The synergistic action of these herbs can produce a comprehensive effect of eliminating the phlegm-stasis pathology while protecting and promoting vestibular function recovery. Furthermore, the recurrence rates in both groups were low, and no significant adverse reactions occurred, indicating favorable safety of the Qingqiao Dingxuan Decoction.

During clinical application, attention should be paid to pattern differentiation-based treatment and modifying the formula according to presenting symptoms. For patients exhibiting concurrent qi and blood deficiency, Astragali Radix and Angelicae Sinensis Radix may be added appropriately to supplement qi and nourish blood; if signs of blood stasis are prominent, add Salviae Miltiorrhizae Radix et Rhizoma and Carthami Flos to enhance the blood-activating and stasis-dissolving effects; for significant nausea and vomiting, add Inulae Flos and Zingiberis Rhizoma Recens to harmonize the stomach, downbear counterflow, and arrest vomiting[9]. Such individualized modifications can further enhance the therapeutic specificity and clinical efficacy.

In summary, Qingqiao Dingxuan Decoction demonstrates definite efficacy and favorable safety in treating residual symptoms after canalith repositioning. It effectively improves patients' vertigo symptoms, enhances quality of life, and promotes vestibular function recovery, indicating promising prospects for broader clinical application and dissemination. However, this study has limitations, including a relatively small sample size and a short observation and follow-up period. Future research should aim to expand the sample size, extend the follow-up duration, delve deeper into its mechanisms of action and molecular targets, and optimize the formula composition, thereby providing higher-quality evidence-based medical evidence for clinical practice.

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In summary, this study confirmed that Qizhi Formula exerts a cerebroprotective effect against CIRI by modulating the M1/M2 polarization balance of BV2 microglia and attenuating excessive neuroinflammatory responses. The synergistic interaction between Astragali Radix and Hirudo is significant, reflecting the scientific basis of the therapeutic approach aimed at tonifying qi and promoting blood circulation. Future research will focus on elucidating the upstream signaling pathways through which Qizhi Formula regulates microglial polarization and will include *in vivo* experiments to validate these findings, thereby providing more comprehensive experimental evidence to support its clinical application.

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