

Discussion on the Prevention and Control of Pediatric Capillary Bronchiolitis Transmission Pattern Based on the Theory of “Treatment of Future Disease”

Mengying Qiang¹, Aimin Feng^{2,*}, Qixin Cui¹

¹*Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712046, China*

²*Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712000, China*

**Correspondence author*

Keywords: Pediatric bronchiolitis, Cure disease theory, Review

Abstract: Pediatric bronchitis is a common acute lower respiratory tract infectious disease in pediatric clinics. Clinical manifestations are cough, shortness of breath, choking and so on. In Chinese medicine, it can be divided into the categories of “asthma”, “wheezing evidence”, “horse spleen wind” and “pneumonia cough”. For bronchitis caused by viral infection, there is no specific treatment program and antiviral drugs, mainly symptomatic treatment. For this disease, it should be prevented as early as possible to avoid multi-organ and multi-system damage, which coincides with the concept of Chinese medicine “preventing disease before it occurs, preventing changes in existing disease, and preventing recurrence after disease”. Based on the idea of “not treating the disease already” in Chinese medicine, this paper focuses on the application of Chinese medicine theories in the staging and prevention of pediatric bronchiolitis, which provides new ideas and methods for the treatment of this disease.

1. Introduction

Infantile bronchiolitis, also known as acute infectious bronchiolitis, is a common acute lower respiratory tract infection in pediatrics, frequently affecting infants under the age of 2 [1]. Infections by pathogens such as respiratory syncytial virus, parainfluenza virus, and *Mycoplasma pneumoniae* are the primary causes of this condition, with respiratory syncytial virus being the most prevalent. The clinical manifestations typically include coughing, shortness of breath, and wheezing. Given the immature development of the respiratory tract and the weaker immune function in young children, the progression of the disease can lead to severe complications, potentially triggering bronchial asthma, heart failure, and respiratory failure, endangering the life of the child. In traditional Chinese medicine, there is no specific nomenclature for this disease; however, based on symptoms such as fever, chest tightness, and sudden wheezing during the onset, it can be categorized under “Xiao Bing” (wheezing disease), “Chuan Zheng” (asthmatic condition), “Ma Pi Feng” (a form of fever associated with diarrhea), and “Fei Yan Chuan Sou” (pneumonia with wheezing and coughing) [2]. In the “Huangdi Neijing” (Yellow Emperor's Classic of Internal Medicine), the chapter on “Four Qi Regulation of the Spirit” states, “The sage does not treat the already sick but prevents the sick, does not correct the

already chaotic but prevents chaos." This principle underpins the theory of prevention in traditional Chinese medicine and has been an essential thread throughout the evolution of Chinese medical culture. Currently, in the treatment of bronchiolitis caused by viral infections, there is a lack of targeted therapy and antiviral drugs with specific efficacy, leading to a predominantly symptomatic approach. While this can effectively prevent disease progression in children, the numerous contraindications and adverse reactions associated with these medications limit their safety and broad application in clinical settings.

Traditional Chinese medicine, with its advantages of multiple targets and phases, has found increased application in treating this condition. Over the years, our hospital has accumulated substantial clinical experience in this field. Focusing on early prevention and treatment to avoid multi-organ and multi-system damage aligns well with the traditional Chinese medical concepts of preventing disease before onset, preventing deterioration after onset, and promoting recovery after convalescence. With this in mind, we base our approach on the TCM principle of "treating the disease before it occurs" and delve into the specific applications of TCM theory in the phased transmission and prevention of bronchiolitis in children. By considering individual constitutional differences, we emphasize prevention before illness occurs. In the early stages of treatment, we aim to prevent the spread of external pathogens and internal transmission. During the middle stages, we focus on purging heat to prevent further progression. In the recovery phase, we concentrate on lung preservation and nourishing yin to support the body's vital energy, offering new perspectives and methods for the management of this condition.

2. Concept of Chinese Medicine for the Treatment of Pre-existing Diseases

The concept of "Treating Before Disease" in Traditional Chinese Medicine (TCM) is a distinctive and advantageous feature of its therapeutic approach, serving as a fundamental principle in both the treatment and prevention of diseases. This advanced medical philosophy, characterized by "preparing for a rainy day" and "preventing troubles before they arise," gradually took shape under the influence of ancient awareness of potential adversities. From the phrase "think of danger in times of peace" and "thinking leads to preparation, and preparation ensures no harm" in the "Zuo Zhuan" during the Shang Dynasty, to the statement "only those who follow the Way can prepare against troubles before they take form, thus preventing disasters" in the "Guanzi" during the Spring and Autumn period, both contributed to the development of the "Treating Before Disease" ideology. This theory, proposed early in the "Huangdi Neijing," is a preventive health preservation strategy. The term "unmanifested illness" first appears in the "Suwen: Discourse on the Adjustment of the Four Qi," which states, "Therefore, the sages do not treat diseases that have already occurred but prevent diseases that are yet to arise; they do not pacify disorders after they have erupted but prevent them before they occur." The "Nanjing: Chapter 77" records, "In treating an unmanifested illness, if liver disease is observed, one should anticipate the liver will transmit to the spleen... Thus, treating before the disease has fully developed is emphasized." Both texts highlight the importance of seizing the opportunity at the early stage of a disease to prevent and treat, thereby achieving the goal of "Treating Before Disease." Zhang Ji (styled Zhang Zhongjing) of the Eastern Han Dynasty further inherited and developed the "Treating Before Disease" ideas from the "Huangdi Neijing," elaborating on the principle and method that "when treating an unmanifested illness, if liver disease is seen, one should strengthen the spleen in anticipation of the liver transmitting to the spleen. In the four seasons, the spleen is robust and not susceptible to evil influences, hence no need for additional tonification." Over time, this concept evolved into a more comprehensive system. Later, during the Ming and Qing dynasties, the "Treatise on Febrile Diseases" and the "Treatise on Epidemics" continued to refine and expand this ideology, ultimately forming a profound and rich system of "Treating Before Disease" in TCM, with its core

being to intercept the onset of disease, prevent its progression, and guard against recurrence. In recent years, as the focus of medicine has increasingly shifted towards preventive care, the distinctive and forward-thinking advantages of TCM's "Treating Before Disease" philosophy have become more evident, and this mindset holds significant clinical implications for the systematic prevention and treatment of bronchiolitis in infants.

3. Etiology and Pathogenesis of Pediatric Capillary Bronchitis

In Traditional Chinese Medicine, pediatric capillary bronchitis is categorized under the ailment of "pneumonia with wheezing." Infants and young children have immature yin and yang, delicate organs, and underdeveloped qi, making their protective outer defenses inherently weak. This intrinsic fragility, coupled with external factors such as exposure to wind, heat, cold, or dampness, or the transformation of other diseases, can disrupt the normal ascending and descending flow of qi, leading to the accumulation and transformation of fire into heat. This results in symptoms such as coughing, wheezing, high fever, and breathlessness. The underlying pathology of this disease is characterized by qi obstruction and phlegm blockage. External pathogenic factors like wind can enter the body through the mouth, nose, skin pores, or the hair follicles, causing the lung qi to lose its ability to disperse and descend, thus becoming internally constrained and eventually stirring up latent phlegm. Alternatively, if external warm or hot pathogenic qi invades the body, it can scorch the body fluids, transforming them into phlegm and obstructing the airways, thereby precipitating this ailment. Furthermore, due to prolonged neglect in treatment, lung disease can affect the spleen, leading to both lung and spleen qi deficiency. If the condition is improperly treated and continues to worsen, it can cause a decline in yang, which in turn harms the yin, disrupting the normal transformation of qi, blood, body fluids, and resulting in the long-term accumulation of blood stasis and phlegm turbidity. Over time, these may evolve into toxic evils that obstruct the meridians, potentially aggravating various symptoms and progressing to a series of diseases such as asthma or dyspnea.

3.1 Initial stage - external wind infection with heat and cold

The lungs are the noble organs, the ministers of respiration, governing the skin and body hair. When external pathogens invade, the lungs are the first to suffer. In the initial stages of bronchiolitis in infants, the primary external cause is the invasion by wind, the foremost among all pathogenic factors, known for its ability to open and disperse, easily assaulting yang positions, often accompanied by cold or heat. The Huangdi Neijing records that "wind-heat in infants" leads to "wheezing," indicating that wind-heat is also a cause of bronchiolitis in infants. On one hand, Ye Tianshi elucidates in his Treatise on Warm Diseases, which expounds the theory of defensive qi, nutrient, and blood, that "warm pathogens ascend and first attack the lungs," and "the lungs, being the highest, are inevitably injured first," as well as "warm pathogens often enter through the mouth and nose," and "inhalation of warm pathogens affects the lung meridians," clearly stating that wind-heat pathogens first enter through the mouth, nose, and skin, then follow the lung meridians to directly attack the lungs and propagate internally. On the other hand, Wu Jutong, drawing on the wisdom of his predecessors, bases his theory on the three-jiao differential diagnosis, proposing that "warm diseases enter through the mouth and nose, and the nasal qi connects with the lungs... if the disease in the upper jiao is not treated, it will then transmit to the middle jiao, involving the stomach and spleen; if the middle jiao disease is not treated, it will transmit to the lower jiao. The disease begins in the upper jiao and ends in the lower jiao," emphasizing that at the beginning of the disease, the upper jiao, especially the lung and defensive qi, is primarily affected, and as the disease progresses, it sequentially transmits from the upper to the lower jiao. When wind-heat pathogens invade externally, heat closes the lungs, causing congestion and fever. The dysfunction of lung qi in its dispersing and

descending actions results in coughing and shortness of breath. The warm and hot pathogenic qi burns body fluids and transforms them into phlegm, often manifesting as yellow phlegm clinically. As phlegm obstructs the lungs, symptoms of severe breathlessness and intense coughing may appear. In *Jingyue Complete Book of Cough*, it states, "external coughs are necessarily due to wind-cold," indicating that when wind-cold invades the lungs, the internal yang qi remains, and if the infant's constitution is deficient in righteous qi, the defensive barrier becomes weak, leading to heat and fever. Dysfunction in lung qi regulation disrupts water metabolism, causing fluid stagnation in the lung meridians, which congeals into phlegm, typically presenting as clear, white phlegm. When phlegm obstructs the airways, lung qi ascends in reverse, resulting in coughing and breathlessness. In the early stages of bronchiolitis in infants, the main syndromes are wind-cold obstruction of the lungs and wind-heat closure of the lungs. Given the pure yang constitution of infants, they are more prone to transform from yang to heat, hence, clinically, the wind-heat closure of the lungs syndrome is more commonly observed.

3.2 Middle stage - phlegm-heat-dampness-toxin, congestion and closure of the lungs

In the intermediate stage of pediatric bronchiolitis, there is an intense heat in the lungs that remains unresolved, accumulating to form heat toxicity. This leads to an abundance of actual heat poison within the child's body, manifesting as high fever and irritability. The nature of fire is to flare upward, scorching body fluids, which congeal with heat-phlegm, causing obstruction in the lungs. This results in severe coughing, audible phlegm in the throat, chest tightness, abdominal distension, and expectoration of mucus, presenting the clinical manifestation of heat poison obstructing the lungs and phlegm-heat obstructing the lungs. According to the theory of differentiating syndromes based on the protective, nutritive, ying, and blood aspects, the warm-heat pathogen gradually penetrates from the lung-wei into the qi aspect. The heart and lungs are located above the diaphragm and are close neighbors; the lungs are the assistant organs, while the heart is the sovereign organ, inherently attributed to the fire element. Thus, this pathogen easily affects the pericardium. Based on Wu Jutong's theory of the three jiao differentiation, the pathogen can transmit from the upper jiao of the lung-wei to the middle jiao of the spleen and stomach. As recorded in "Treatise on Febrile Diseases," it states: "Damp pathogen entering the middle jiao can be cold-damp or damp-heat, transmitted from the exterior, or inherently present in the body, or a combination of both," highlighting that damp pathogen can manifest as damp-heat or cold-damp and can either be transmitted from the exterior to the lung-wei, or arise from internal weakness of the spleen and stomach, or be a result of the interaction between the two. In "Treatise on Damp-Heat Diseases" by Xue Shengbai, the transmission law of damp-heat pathogenic factors is explained: "Damp pathogen enters through the mouth and nose, directly heading to the middle jiao. If the middle qi is strong, the disease tends to affect yangming; if the middle qi is weak, the disease tends to affect taiyin." This elucidates that when damp pathogen enters the body through the upper jiao of the mouth and nose, it can directly penetrate to the middle jiao. If the stomach yang is vigorous, dampness transforms into heat, resulting in a damp-heat disease where heat predominates over dampness. If the spleen yang is deficient, dampness predominates over heat. If both conditions coexist, the disease is characterized by the equal predominance of dampness and heat. Due to the insufficiency of the lungs and spleen in children, they are more susceptible to being affected by damp pathogen compared to adults. If feeding is improper, with excessive consumption of mother's milk, the spleen and stomach may be impaired, leading to internal generation of dampness, which accumulates and generates heat, ultimately causing the syndrome of damp-heat obstructing the lungs. This condition often centers around the middle jiao of the spleen and stomach, where dampness and heat intermingle, making the disease protracted and difficult to resolve. It can spread throughout the three jiao, affecting the lungs' function of diffusion

and descent when ascending, and invading the intestines or bladder when descending, thereby triggering damp-heat in the lower jiao. It can pervade the upper and lower regions and the exterior and interior, commonly presenting with a heavy and muffled cough, copious phlegm, poor appetite, and sticky stools. If care is inadequate, such as inappropriate addition or removal of clothing, and a preference for cold drinks, dampness and cold can obstruct the lungs and spleen due to impaired spleen function, leading to stagnation of water and dampness and the formation of phlegm-dampness. This results in symptoms of breathlessness with phlegm sounds, abundant white phlegm, poor appetite, and loose stools, which is identified as the syndrome of phlegm-dampness obstructing the lungs. The transmission of this condition is largely similar to that of damp-heat.

3.3 Late stage - deficiency of the lungs and spleen, blood stasis and obstruction of collaterals

As the condition progresses and enters the convalescence stage just before recovery, a child's delicate lungs are prone to damage and less likely to heal swiftly. After the phase of exterior pathogenic factors penetrating internally and transforming into heat, and the stage of exuberant toxicity, despite receiving standardized and adequate treatment, the clinical symptoms and signs in the child have diminished, and the condition has been effectively controlled. However, due to the long-term presence of phlegm-dampness and other pathogenic factors in the blood, the flow of qi is obstructed, causing poor circulation of blood and making it difficult to dispel heat stagnation, which lingers within the blood vessels and forms a pattern of stasis and heat internally. As mentioned in the **Treatise on Pestilential Fevers**: "the pathogenic heat lingers for a long time without a way to dissipate, thereby clashing with the blood, causing it to stagnate in the meridians." Infants and young children, being bodies inherently susceptible to internal heat, often exhibit a pattern of mixed deficiency and excess during this period, where the pathogens of "stasis" and "heat" are intertwined, leading to visible signs such as a bluish eyelid and dark spots on the tongue. Prolonged illness depletes both spirit and qi, hence symptoms of weak coughing, lethargy, and poor appetite are also observed, which are indicative of qi deficiency and blood stasis syndrome. In children, yang is often in excess while yin is deficient. Ye Tianshi established the Wei-Qi-Ying-Xue differential diagnosis system and elucidated in depth that "wind, combined with heat and dryness, inevitably dries up the orifices, indicating that the yin-nourishing qi of water cannot rise to nourish, a result of the dual yang forces seizing each other." The pathogenic factors of heat and dryness are likely to injure yin and lead to fluid depletion throughout the course of the disease. In the later stages of the disease, these factors often manifest as yin deficiency after the elimination of pathogens, accompanied by persistent lung heat and cough, which consumes the yin of the lungs. The lingering pathogenic factors that do not completely subside result in symptoms such as dry cough with scant sputum, heat in the palms and soles, low-grade fever, and night sweats, all indicative of lung yin deficiency syndrome.

4. Application of the concept of treating the disease before it occurs in the prevention and treatment of pediatric capillary bronchitis

4.1 Prevention before Disease

In the Huangdi Neijing (The Yellow Emperor's Inner Canon), it is said: "When righteous energy resides within, evil cannot invade." The core of disease prevention lies in nipping the problem in the bud, guarding against illness before it manifests, as described: "Eliminate impending troubles, treat nascent diseases." This philosophy of early intervention and prevention before the onset of disease is applicable to all, with particular emphasis on high-risk populations, especially infants who are prone to bronchiolitis. According to the clinical experience of Professor Wang Lining [3], children's constitutions can be categorized into seven types: Harmonious Constitution, Interior Heat

Constitution, Yin Deficiency Constitution, Qi Deficiency Constitution, Yang Deficiency Constitution, Phlegm-Dampness Constitution, and Predisposed Constitution. The **Jingyue Complete Book** states: "Given the yin and yang constitution, a yin organ prefers warmth, making ginger and cassia suitable for their pungent heat, or a yang organ prefers cold, making Coptis suitable for its bitter cold, or a balanced organ where heat can invigorate yang and cold can nourish yin." This highlights the susceptibility and predisposition of various constitutional types to specific patterns of bronchiolitis in children. In treatment, strategies should be tailored to individual constitutional types, with prophylaxis initiated before the disease takes hold. For the Harmonious Constitution, which is less prone to illness and characterized by immature yin and yang, medications are primarily balanced, and action is deferred until symptoms manifest. Children with Interior Heat Constitution often exhibit hyperactivity of heart fire, typically from congenital constitution or improper feeding, making them more susceptible to heat transformation and fluid depletion when ill. Everyday medications should incorporate heat-clearing and yin-nourishing substances, such as Scutellaria, Coptis, raw rehmannia, and Scrophularia. If the mother overconsumes warm and drying foods during pregnancy, the child may suffer from a deficiency of internal yin fluids postpartum, leading to a Yin Deficiency Constitution characterized by heat in the palms and soles, dry mouth, and throat. Children with Qi Deficiency Constitution typically have congenital spleen and lung qi insufficiency, presenting with shortness of breath, poor appetite, and easy fatigue. Their bodies are frail, and recovery is slow after illness. When selecting prescriptions for prevention, it is important to avoid overusing warming and drying qi-regulating herbs, which might deplete qi and disturb the spirit. Adjusting the spleen and stomach and supporting righteous energy should take precedence; qi deficiency leads to yang deficiency, which in turn causes stagnation of phlegm-dampness and water retention, potentially leading to complex and chronic conditions. The **Liju Shi Simplified Formula Discourse** by the renowned Song Dynasty physician Li Minshou emphasizes the importance of children's gastric qi, placing Si Junzi Tang (Four Gentlemen Decoction) at the forefront of various prescriptions, which can be modified to treat various pediatric ailments [4]. Children with Yang Deficiency Constitution are often formed due to congenital insufficiency or prolonged illness, characterized by aversion to cold, coldness, and lethargy. The team led by Chen Yueqi [5] found that applying moxibustion to the Shenque point (the center of the umbilicus) for 20-30 minutes could regulate the circulation of qi and blood, improve physical function, and even alleviate symptoms of pediatric respiratory infections, offering a simple and effective method for preventing bronchiolitis in infants. Children living in humid and rainy environments for extended periods, with poor spleen function, may see an increase in water retention, leading to a Phlegm-Dampness Constitution characterized by a fuller and softer body frame, often with loose stools and poor appetite. Medications should be based on warming and transforming herbs like ginger, white mustard seed, and Magnolia, combined with qi-invigorating and spleen-strengthening ingredients to resolve phlegm-dampness. Xiao Jueming [6] formulated a three-nine herbal granule with Pinellia, tangerine peel, Codonopsis, Poria, Atractylodes, licorice, and lotus stem for monthly adjustments, achieving positive clinical outcomes. Children with inherited diseases and specific constitutions are often referred to as allergic constitutions, known as Predisposed Constitution. Such children are prone to sneezing, coughing, urticaria, and asthma. Professor Shao Ying [7] proposed the "Tongyuan Xiaomin" pediatric massage method, starting from the separation of yin and yang through tendon manipulation and ending with the manipulation of the Jianjing point, selecting acupoints like Xuehai, Geyu, and Tongyuan for stimulation to regulate the meridians, harmonize qi and blood, and improve the constitution of children with Predisposed Constitution.

4.2 Pre-existing Diseases and Prevention of Changes

4.2.1 Preventing external and internal infections

Traditional Chinese Medicine emphasizes the prevention of disease by addressing both the potential for transformation and the containment of existing ailments. This approach can be integrated with pediatric bronchiolitis, which falls under the category of "warm-heat diseases" in the study of epidemic fevers. Guided by the theories of San Jiao (Triple Burner) and Wei-Qi Ying-Xue (Defense, Qi, Nutrient, and Blood) in epidemic fever medicine, it aims to prevent and manage both the external affection and internal transmission of the disease. Renowned epidemic fever expert Wu Ju-tong, in the "Treatise on Epidemic Fevers," Upper Burner Section, Article Six, states, "In cases of Taiyin wind fever, marked by coughs but with mild body heat and slight thirst, the remedy is the gentle cooling formula Yin Qiao Powder." He also proposes the principle "treating the Upper Burner as if using feathers (only what is light can ascend)," indicating that in the early stages when warm pathogens invade the lung meridian with minimal heat, a gentle cooling treatment should be administered. This is often based on the formula Yin Qiao Powder, composed mainly of honeysuckle and forsythia, which is used in accordance with individual symptoms. Research by Liu Jian-zhou reveals that the extract of forsythia has anti-inflammatory properties, with 90% fluorescent treponemal antibody (FTA) serving as the primary active anti-inflammatory component [8]. This can reduce the secretion of nitric oxide (NO) in a model of human respiratory epithelial cell inflammation and to some extent increase the level of intracellular reactive oxygen species.

Wang Xiao [9] treated the condition based on the principles of ventilating the lungs, alleviating asthma, stopping cough, and eliminating phlegm, as well as clearing heat and detoxifying, by adding Ma Xing Shi Gan Decoction to Yin Qiao Powder to prevent pathogenic heat transformation. Experimental results showed that after treatment, the FEV1 and PEF levels significantly increased, indicating a reduction in respiratory resistance and the absence of breathing difficulties, suggesting that the formula can facilitate the recovery of lung function in children with wind-heat lung obstruction due to bronchiolitis.

Wang Xiao [10] and others prescribed a modified cough and expectorant decoction composed of 5g of honey-fried ephedra, 8g of apricot seed, 20g of raw gypsum, 10g of fish mint, 10g of honeysuckle, 6g of licorice, 8g of loquat leaf, and 8g of forsythia. Among these, honey-fried ephedra, apricot seed, raw gypsum, and licorice function to ventilate the lungs and relieve asthma. Raw gypsum, when combined with ephedra, not only cools and clears heat but also promotes the production of fluids to clear the heat, while apricot seed enhances the cough-stopping and asthma-relieving effects of honey-fried ephedra, and all the herbs work synergistically to achieve a high therapeutic efficacy.

For conditions primarily characterized by wind-cold invading the lungs, causing lung obstruction due to wind-cold, Huagai Powder or similar formulas can be customized to address the symptoms. Zhang's Medical Compendium states: "When the lungs are affected by wind-cold, resulting in coughing, the patient cannot lie down comfortably, and the cough worsens with a cold back, then Xiaoqinglong Decoction should be administered." Xiaoqinglong Decoction originates from *Treatise on Cold Damage*, where the dosage of honey-fried ephedra and cassia twig in the original formula is reduced to 5g each, Pinellia and white peony to 6g each, dried ginger and licorice to 3g each, and asarum and schisandra to 2g each. These herbs, when ground and mixed with vinegar to form a paste and applied to acupoints such as Feishu and Shanzhong, effectively alleviate symptoms such as fever and respiratory distress in children [11].

Studies have found [12] that ephedrine in ephedra can relieve the symptoms of bronchial spasm by relaxing the smooth muscles of the bronchi; white peony inhibits abnormal proliferation of T lymphocytes, thus positively regulating the body's immune function; and licorice can directly act on

various viruses, enhancing macrophage activity and exerting broad-spectrum antiviral effects. Comprehensive Record of Holy Benevolence in Pediatrics: Wind-Heat in Children posits: "Children have a constitution of pure yang, with naturally abundant heat." This indicates that children, due to their constitution of pure yang, are prone to developing heat after falling ill, and cold-natured medicines should be used as an adjuvant. However, as Wu Jutong stated, "The use of bitter and cold medicines in pediatrics greatly depletes the vital energy," therefore, in clinical practice, to ventilate the pores, release pathogenic factors, promote the free flow of lung qi, and prevent pathogenic factors from transforming into heat and spreading internally, the initial dosing in the course of the disease should mainly include 1-2 cold and cool herbs, such as gypsum, baicalin, forsythia, and dandelion.

In summary, in the early stages of pediatric pneumonia with wheezing and cough, it is advisable to promptly employ light and cool substances, such as mint, mulberry leaf, and chrysanthemum, to expel pathogenic factors from the blood stage to the surface. Simultaneously, a small amount of cold and cool herbs should be included to prevent the transformation of the condition into heat and its internal spread.

4.2.2. Lagoon Heat Prevents Transmission

Following the onset of illness, therapeutic intervention should be administered as early as possible, to address the condition while it remains superficial and not yet deep, minor and not yet severe, thus achieving optimal efficacy to prevent its further progression and transformation. In cases where children with bronchiolitis have excessive phlegm that is difficult to expel, nebulized inhalation should be promptly initiated to dilute the phlegm, while percussion on the back is encouraged to facilitate its expulsion from the body. For critical cases with high fever or even convulsions, immediate physical cooling should be applied, and calming, antispasmodic, and antipyretic measures should be taken within 5 minutes. During the treatment process, to prevent various adverse complications such as abdominal distension and constipation, patients should be advised to remain in absolute bed rest and to drink more water to increase body fluid volume.

For the clinical characteristics of middle-stage infantile bronchiolitis, traditional Chinese medicine (TCM) should be utilized to leverage its distinctive advantages, employing differentiated diagnosis and treatment to provide precise and effective prevention and therapy. Professor Sun Leping, based on the experience formula Qing Fei Yin from Master Wang Lie, prescribed Huang Qin (*Scutellaria baicalensis*) as the principal herb to purge solid heat from the lungs, and Lian Qiao (*Forsythia suspensa*) as the secondary herb to disperse wind-heat, complemented by She Gan (*Belamcanda chinensis*) and Chuan Bei Mu (*Fritillaria cirrhosa*) to stop coughing and expel phlegm, thereby achieving the effect of clearing and proclaiming lung qi. The entire formula aims to clear heat and detoxify, and to proclaim the lungs and transform phlegm, providing effective ideas and methods for treating cases of heat-toxin closure and phlegm-heat closure in the lungs.

Since children are of a purely yang constitution, where the six qi easily transform into fire, phlegm-dampness constitution is prone to stagnation and heat transformation, leading to the less common clinical presentation of phlegm-dampness closure in the lungs in pediatric bronchiolitis. Given that the lung meridian "arises from the middle burner, descends to the large intestine, and returns to follow the path of the stomach," if the upper burner's lung heat follows the meridian to the middle burner spleen and stomach, and the spleen and stomach's functions of transportation and transformation become abnormal, dampness-turbidity accumulates, leading to more pronounced lung heat stagnation above and damp-heat accumulation below, ultimately transforming into a phlegm-dampness closure of the lungs. Treatment should focus on regulating the three burners, with appropriate herbs for clearing heat and resolving dampness. If the damp-heat in the upper burner is not promptly eliminated and spreads to the middle burner, then the Gan Lu Disinfection Pill combined with the Three Kernels Decoction, modified to clear dampness and heat

and regulate the qi of the three burners, should be used.

For children with a naturally hot constitution, greater emphasis should be placed on purging heat in preventative treatment, and for those with severe heat, herbs like Zhi Zi (*Gardenia jasminoides*) and Shi Gao (*Gypsum fibrosum*) can be added to treat heat expulsion. In critically severe cases, where heat penetrates to the jueyin, causing convulsions and loss of consciousness, remedies such as Niu Huang Clear Heart Pill, Purple Snow Pill, and Zhibao Pill should be immediately administered to clear heat, detoxify, and soothe the spirit. If pertussis-like spastic coughing occurs, herbs like stir-fried Bai Bu (*Stemona sessilifolia*), Chuan Tui (*Cicada molts*), Tu Jing Pi (Earthworm), and Dai Ha San (Verde-dyed herb powder) can be added to stop coughing and relieve spasms. For phlegm elimination and abscess removal, ensuring clear lung function, herbs like stir-fried Ban Xia (*Pinellia ternata*), Zhe Bei Mu (*Fritillaria thunbergii*), Ting Li Zi (*Descurainia sophia*), Yu Xing Cao (*Houttuynia cordata*), and Qu Lou (*Trichosanthes kirilowii*) can be selected. For patients with rashes, herbs like Zi Cao (*Lithospermum erythrorhizon*) and Mu Dan Pi (*Paeonia suffruticosa*) can be added to dispel wind and cool the blood.

4.3 Post-recovery prevention of relapse, safeguarding vital energy, and nourishing the lungs to preserve yin

The concept of Traditional Chinese Medicine (TCM) emphasizes prevention of recurrence after recovery, as stated in the Plain Questions: The True Doctrine of the Ancient Sages—“One should follow the principles of yin and yang, harmonize with techniques and numbers, eat and drink with moderation, and lead a regular life without overexertion, thereby enabling form and spirit to coexist.” From the insights on post-recovery care to the Elbow-Reserved Emergency Formulas by Ge Hong of the Eastern Jin Dynasty, which says: “After being cured of a poisonous ailment, within a hundred days, one should abstain from consuming pork, dog meat, and mutton... Eating these can lead to relapse, making the disease difficult to treat.... In the case of post-recovery of pediatric bronchiolitis, one should avoid being reinfected by external pathogens, maintaining dietary discipline and regular living habits, as well as preventing the condition from recurring due to the involvement of other organs. Chronic illness depletes the lung qi and can further impact the middle burner's earth element, specifically the spleen, or severely affect the lower burner's innate kidney qi. In cases of lung and spleen qi deficiency, treatment should focus on the middle burner and the spleen and stomach, with prescriptions like the Six Gentlemen Decoction to strengthen the spleen and supplement the qi, nourishing both qi and yin of the spleen and lungs, and adjustments to the Six-Flavor Rehmannia Pill to replenish the kidney yin. Professor Li Xinmin believes that during the period of lung and spleen qi deficiency, the spleen fails to transform and transport, leading to the internal generation of dampness and obstruction of the qi mechanism. Therapeutically, the method of cultivating earth to generate metal should be employed to regulate the ascending function of the spleen and the descending function of the stomach, eliminate the source of phlegm to repel external pathogens, and strengthen the source of qi and blood production to prevent relapse. Clinically, the selected prescription is the Huoxiang Zhengqi Powder combined with the Baohewan, with modifications.

5. Conclusions

Pediatric capillaritis, due to its viral mutability, the diversity of clinical manifestations, and the incompleteness of infants' immune system development, remains largely symptomatic in today's treatment approaches. In managing this condition, emphasis should be placed on the child's constitution, employing the “Three Jiaos and Wei Qi Ying Xue” theory for differential diagnosis and treatment according to the three stages of pediatric capillaritis transmission. Initially, efforts should focus on preventing external infections and internal progression. In the middle stage, the priority lies

in clearing lung heat, meticulously investigating the cause, carefully understanding the pathogenesis, and guarding against disease exacerbation, actively providing symptomatic treatment. During the recovery phase, clarity in distinguishing between deficiency and excess, nourishing yin, and consolidating the root are essential to prevent the disease from lingering and ensure a thorough resolution, effectively eliminating any potential for poor outcomes in pediatric pneumonia and dyspnea from the outset. Grounded in the concept of “prevention before disease,” “preventing progression once diseased,” and “preventing recurrence after recovery,” this TCM preventive approach fully demonstrates the unique advantages of traditional Chinese medicine in the transmission patterns and prevention of pediatric capillaritis, with its foresight holding significant clinical value.

References

- [1] Peng Kangning, Zhou Weihua, Zheng Yuyan. *Research progress of pediatric bronchiolitis in the context of integrated traditional Chinese and Western medicine* [J]. *World Composite Medicine*, 2023, 9(11):196-198.
- [2] Xiao Yunpeng, Jing Fujie. *Clinical research progress of traditional Chinese and Western medicine in the treatment of bronchiolitis* [J]. *Journal of Jiangxi University of Traditional Chinese Medicine*, 2020, 32(01):121-124.
- [3] Liu Han, Wang Guangqing. *Summary of Professor Wang Lining's academic experience on the characteristics of children's constitution and medication* [J]. *Chinese Journal of Pediatrics*, 2023, 19(04):14-16.
- [4] Chen Yaoqi, Liang Zhuozhi, Xu Qiqi. *Effect of umbilical moxibustion on children with respiratory tract infection* [J]. *Ming Yi*, 2023, (03):12-14.
- [5] Xiao Je-ming. *Experience of using constitution differentiation in pediatrics* [J]. *Abstract of World Latest Medical Information*, 2018, 18(18):177.
- [6] Li Xiong, Li Chaoxia, Shao Ying. *Shao Ying's experience in treating chronic urticaria in children with Tuina therapy of Tongyuan Xiaomin* [J]. *Journal of Guangzhou University of Chinese Medicine*, 2020, 37(04):733-737.
- [7] Liu Chuanmei, Liu Qichao, Niu Chengqing et al. *Clinical observation of Qingfei-Huatan decoction in the treatment of children with asthma of pneumonia of wind-heat blocking lung type* [J]. *Basic Chinese Medicine*, 2023, 2(03):41-46.
- [8] Wang X. *Application of Maxing-Shigan decoction and Yingqiao powder in the treatment of infantile pneumonia with wheezing cough and wind-heat blocking lung syndrome* [J]. *Guangming Traditional Chinese Medicine*, 222, 37(11):1980-1982.
- [9] Wang Xiao, Meng Niu 'an, Zhao Lisha et al. *Clinical effect of Zhitechuan decoction in the treatment of children with pneumonia asthma and cough syndrome of wind-heat blocking lung* [J]. *Journal of Practical Chinese Medicine Internal Medicine*, 2021, 36(06):124-126.
- [10] Yang Huming, Yuan Qing-Dan, Bi Mei-fen. *Clinical study of Xiaoqinglong Decoction transdermal therapy in the treatment of children with bronchiolitis of wind-cold closed lung type* [J]. *New Traditional Chinese Medicine*, 2021, 53(08): 26-29.
- [11] Wu Jin-wei, Zhang Yi, Zhang Yue et al. *Research progress and quality marker (Q-marker) prediction of Xiaoqinglong Decoction* [J/OL]. *Chin J Traditional Chinese Medicine*: 1-18[2024-03-23].
- [12] Gu Kuan, Sun Xiaozhou, Tian Ye et al. *Clinical experience of Sun Liping in treating children with pneumonia and wheezing* [J]. *Jilin Traditional Chinese Medicine*, 2012, 42(02):173-175.