Research Status of Mongolian Medicine in the Treatment of Facial Paralysis

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Abstract: Facial paralysis is a disease primarily characterized by dysfunction of the facial muscles on one side of the face. It can occur in any season, though it is more prevalent in the spring and autumn, and it can affect individuals of all age groups. Conventional treatment for facial paralysis typically involves the use of hormones and surgical interventions. The exact cause of the disease remains unclear, and there is no specific treatment for facial paralysis in clinical practice. Hormonal drugs and surgery are commonly used, but due to the potential for adverse reactions or the induction of sequelae by hormones, an increasing number of patients have raised concerns about these treatments. Mongolian medicine offers a variety of treatment methods with fewer side effects, making it a promising area for further exploration. As a result, it has attracted the attention of many scholars and has become a key area of current research on facial paralysis. This article summarizes various Mongolian medical treatments for facial paralysis, including combination therapies, with the aim of providing new ideas for clinical treatment.

Keywords: Facial Paralysis; Miansa; Mongolian Medicine; Modern Medicine; Treatment

1. Introduction

Facial paralysis is a common clinical condition characterized primarily by motor dysfunction of the facial muscles. It can occur in any season, but is more prevalent in the spring and autumn. Clinically, it manifests as paralysis of the facial muscles on one side, with symptoms such as reduced forehead wrinkles, enlarged palpebral fissures, inability to close the eyelids, and flattening of the nasolabial fold[1, 2]. Statistics show that the global annual incidence rate of facial nerve paralysis is 20-25 cases per 100,000 people, while in China, it reaches as high as 258 cases per 100,000 people[3, 4]. The exact cause of this disease remains unclear, and there is no specific treatment for peripheral facial paralysis in clinical practice. Common treatment methods include the use of hormones, antiviral drugs, neurotrophic drugs combined with physical therapy, or facial muscle exercises, but the treatment effects are unstable and side effects are significant[5]. If not treated in time, it can lead to sequelae, affecting the patient's appearance, daily life, and quality of life. Therefore, the treatment of facial paralysis has attracted widespread attention worldwide.

2. Mongolian Medicine's Understanding of Facial Paralysis

In Mongolian medicine, facial paralysis is referred to as "Miansa," and it is considered a cold disease caused by an imbalance of Badagan and Heyi. Based on its clinical features and symptoms, it falls under the category of "Heyisa" in the Mongolian medical classification of "Baimai" diseases. It is categorized as "Sabing" in the classic Mongolian medical texts "Ganlu Sibu" and "Lantabu," and as "Baimai Disease" in "Mongolian Medical Golden Cabinet." In the "Chinese Medical Encyclopedia • Mongolian Medicine"[6] and "Mongolian Traditional Therapy"[7], it is specifically named "Miansa" and listed separately, with detailed records of its etiology, treatment plans, and methods.

Facial paralysis is a common condition, mainly caused by factors such as excessive fatigue, alcohol abuse, excessive sweating, or exposure to wind and cold while sleeping. These factors disrupt the balance of the three elements "Heyi," "Xila," and "Badagan" in the body, leading to an excess of Heyi and Badagan, which in turn affects the circulation of Qi and blood in the face, causing blockages and affecting the Baimai in the head or face. The resulting ischemia and edema of Baimai lead to conduction dysfunction, causing facial symptoms such as skewed face, mouth, and lips[8]. Total paralysis of the facial muscles on the affected side leads to distinctive symptoms: the disappearance of the forehead's natural lines, the expansion of the eye openings, the shallowing of the groove from the nose to the mouth, the drooping of the mouth's corners, and a noticeable tilt of the mouth towards the side that remains healthy, particularly evident when smiling or grinning. This array of changes paints a clear picture of the impact of complete facial muscle paralysis on one's facial expressions and symmetry. The affected side cannot perform actions such as raising the forehead, frowning, closing the eyes, puffing the cheeks, or pursing the lips. When inflating the cheeks or whistling, air leaks from the affected side because the lips cannot close. During the act of eating, individuals affected by facial paralysis often find themselves dealing with food particles becoming lodged in the buccal cavity on the paralyzed side. Concurrently, there is a tendency for saliva to escape from this area, an involuntary reflex that can be challenging to manage[9].

3. Modern Medicine's Understanding of Facial Paralysis

Facial paralysis, also known as facial nerve paralysis, is a common neurological condition characterized primarily by the deviation of the mouth and eyes to one side, accompanied by symptoms such as incomplete eyelid closure, loss of forehead wrinkles, pain behind the ear, and drooling. Facial nerve paralysis, referred to as FP, arises from dysfunction affecting the seventh cranial nerve pair, with the severity ranging from minor to profound. This neurological condition is distinguished into central and peripheral types, reflecting whether the injury to the nerve is in the brain itself or along its extra-axial course emanating from the brainstem[10].Currently, there is no unified opinion on the pathogenesis of facial paralysis in modern medicine. Several hypotheses exist to explain the causes of facial paralysis, primarily including the following five academic views: viral infection, circulatory disorders, nerve compression, immune factors, and genetic influence. In recent years, the viral infection hypothesis has gained widespread acceptance among scholars, suggesting that facial nerve paralysis may be associated with various viruses, with the infection of herpes simplex virus type 1 (HSV-1) being the main cause. FP exhibits some characteristics of viral infectious diseases, leading most scholars to accept the viral infection hypothesis, which gradually formed the HSV infection theory—after the initial infection of the body with HSV-1, the virus retrogrades along the nerve endings to the geniculate ganglion, where it establishes latent infection. Under specific conditions, the virus reactivates and spreads along the axons, causing facial nerve inflammation due to the host's immune response to viral antigens. This inflammation within the narrow bone canal compresses the nerve, resulting in the manifestation of facial nerve paralysis. This hypothesis is also supported by serological, molecular biological, and animal model studies on the virus[11].

4. Treatment of Facial Paralysis

4.1 Modern Medical Treatment of Facial Paralysis

Facial paralysis is characterized by acute onset, rapid progression, high incidence, and the likelihood of residual sequelae. Facial paralysis not only disrupts facial aesthetics but also exerts profound physical and psychological pressures on sufferers. The standard treatment repertoire for this condition typically leans towards medical interventions, encompassing the use of corticosteroids and antiviral drugs, complemented by surgical procedures when necessary[12, 13]. However, the use of these drugs is not without its drawbacks, as they may provoke a range of adverse effects. The ingestion of corticosteroids could potentially lead to osteoporosis, cardiovascular complications, immune suppression, delayed wound healing, metabolic irregularities concerning glucose and lipids, and even mental health issues[14].

The consumption of antiviral medications is also associated with gastrointestinal distress, manifesting as nausea and vomiting, and neurological symptoms such as dizziness and convulsions, with the risk heightened at higher dosages[15]. The financial burden of surgical treatments poses a significant barrier for some families, making such options unattainable. In light of these challenges, there is an evident and pressing need for the development of a reliable and robust alternative therapeutic strategy. Such an approach should aim to alleviate the distress borne by individuals living with facial nerve paralysis, offering them a viable and accessible means of treatment.

4.2 Mongolian Medical Treatment of Facial Paralysis

In Mongolian medicine, there are various clinical treatment options for facial paralysis, which can be summarized into the following categories: internal treatment, external treatment, a combination of internal and external treatment, and integration of Mongolian medicine with other medical approaches. Among these, Mongolian external treatment is the most widely recognized, especially in recent decades as people have become more health-conscious and more accepting of these treatments. Clinical studies have shown that simple massage therapy combined with acupuncture and the application of Heiyunxiang -4 medicinal liquor medicinal wine smear therapy combined with acupuncture therapy have good clinical efficacy in treating peripheral facial paralysis. However, the Heiyunxiang -4 medicinal liquor medicinal wine smear therapy combined with acupuncture therapy has advantages in controlling the condition during the acute phase, shortening the course of the disease, and being simple and safe[16]. Clinically, oral administration of Mongolian medicine such as Sanpen Aolibu, combined with neurotrophic drugs like mecobalamin, vitamin B1, and vitamin B12, has a synergistic effect in treating FP. Blending the ancient practice of Mongolian acupuncture with the consumption of indigenous Mongolian herbal medicines has proven to be efficacious in addressing peripheral facial paralysis. This synergistic therapeutic approach not only shows promise in clinical settings but also warrants consideration for wider adoption and advocacy within the medical community[17]. Clinically, depending on the condition, Mongolian warm acupuncture therapy is applied sequentially to the postauricular point, cheek point, eyebrow point, upper lip point, lower lip point, and eyebrow point to treat peripheral facial neuritis, showing significant efficacy. During the treatment, Mongolian medicine Yi He Ha Ri-21, which clears “Xila” heat, and Ga Ri Di, which removes “Nian,” reduces swelling, and dries “Xie Ri U Su,” are used. The combined treatment can achieve the effects of dredging meridians, promoting Qi and blood circulation, nourishing tendons, improving clinical efficacy, shortening the course of the disease, and effectively improving prognosis[18, 19]. Empirical clinical data have consistently demonstrated the effectiveness of Mongolian external application therapy as a viable treatment for peripheral facial paralysis, effectively aiding in the rejuvenation of facial nerve functionality[20]. Research has confirmed that external application therapy in the treatment of facial paralysis can have anti-swelling, anti-inflammatory, and antibacterial effects, improving facial circulation and accelerating microcirculation in facial capillaries, thereby reducing muscle paralysis[21]. Recently, there has been an increasing number of studies on the efficacy of acupuncture and external application of traditional medicine in treating facial paralysis, confirming their effectiveness. Mongolian medicine Maqianzi-2 (MM-2) is a traditional Mongolian external treatment widely used in clinical practice for treating facial paralysis. MM-2 is a topical formulation developed by well-known Mongolian medicine experts through years of clinical experience, and its safety and effectiveness in pain relief have been recognized over the years.

5. Research Status

In recent years, the incidence of facial paralysis has been on the rise, with factors including exposure to cold, viral infection, and autonomic nervous system instability contributing to its onset. Although the disease does not directly threaten life in the short term, if not treated promptly, it can lead to severe damage to facial nerve function and even cause complications such as facial twitching. In the most severe cases, patients may lose

their vision due to corneal ulcers, making timely treatment crucial[22, 23]. Emerging research underscores the potential of the neurotrophic factor GDNF to stimulate axonal regrowth, thereby potentially hastening symptom resolution in facial nerve paralysis and supporting the nerve's return to functional signal transmission. GDNF's influence extends to the upregulation of key proteins such as GAP-43 and the enhancement of critical signaling pathways within the central motor neurons responsible for facial movement, specifically the PI3K/AKT/mTOR axis. This upregulation is posited to amplify the nerve's regenerative capabilities. Moreover, targeted GDNF administration directly into the buccinator muscle presents a promising strategy for the protective shielding of the facial nerve against compressive damage. These insights pave the way for groundbreaking clinical approaches to facial nerve rehabilitation, offering a paradigm shift in our understanding and treatment of facial nerve repair strategies[24]. Researchers Fei et al. found that electroacupuncture can upregulate the expression of vascular endothelial growth factor (VEGF) in facial neurons and promote the recovery of peripheral facial paralysis by activating the MAPK/ERK signaling pathway[25]. Tang's experimental results showed that acupuncture combined with electroacupuncture treatment can effectively inhibit the expression of HSV-1 DNA, NF-κB, NF-κB mRNA, IL-1β, and TNF-α. The longer the treatment duration, the more significant the inhibitory effect. This indicates that acupuncture has a definite effect in antiviral infection treatment and is highly effective in treating facial nerve paralysis during the acute phase by modulating the NF-κB signaling pathway[26]. Furthermore, electroacupuncture has demonstrated remarkable effectiveness in alleviating peripheral facial paralysis induced by facial nerve compression in Sprague-Dawley (SD) rats, thereby hastening the nerve's recuperative mechanisms. Scientific investigations have revealed that this therapeutic approach not only elevates the levels of VEGF protein among facial neurons but also invigorates the VEGF/MAPK/ERK signaling pathway, conferring neuroprotective benefits[27]. In tandem, electroacupuncture stimulates an increase in GDNF protein expression, which activates the PI3K/AKT pathway and subsequently encourages the anatomical restoration of facial neurons[28]. Collectively, these discoveries construct a robust scientific scaffold that elucidates the neuroprotective potential of electroacupuncture in the management of peripheral facial paralysis.

6. Discussion

Facial paralysis, also known as facial nerve palsy and referred to as "Miansa" in Mongolian medicine, is a common disease characterized primarily by motor dysfunction of the facial muscles. The main clinical manifestations include facial asymmetry, with patients often unable to perform basic movements such as raising the eyebrows, closing the eyes, puffing the cheeks, or pouting. In Mongolian medicine, the cause of this disease is believed to be an imbalance of the three roots, leading to an excess of Badagan and Heyi, which invades the white meridians of the face, obstructing their conductive function and resulting in stagnation of Qi and blood. Clinically, Western medicine primarily employs drug and surgical treatments. Drug therapy mainly involves the use of corticosteroids, but they can cause significant adverse reactions. Cranial surgery may result in postoperative trauma or other complications, and recovery time may be prolonged. In contrast, Mongolian medicine offers a variety of treatment options with significant efficacy. Currently, the treatment of facial paralysis in Mongolian medicine is based on a holistic approach, treating the disease according to its cause (the internal causes of the six diseases: Heyi, Xila, Badagan, blood, yellow water, and worms) and its triggers (the four external causes of disease: climate change, diet, daily habits, and sudden factors, collectively referred to as the "four pathogenic factors"). The treatment principles include suppressing the evils of Heyi and Badagan, and clearing the black and white meridians. This is achieved by promptly administering Mongolian medicine according to the syndrome differentiation, along with the use of traditional Mongolian external therapies to directly stimulate and clear the black and white meridians at the affected site. Additionally, in the treatment of facial paralysis, Mongolian medicine is complemented by effective nursing measures

that address specific care needs, improve psychological well-being, adjust dietary habits, provide lifestyle guidance, and offer health education, further enhancing the treatment effects and improving the quality of life. Mongolian medicine possesses a diverse range of treatment methods for facial paralysis, and significant clinical results have been achieved. However, the mechanisms underlying Mongolian medical treatments for facial paralysis are not yet fully understood, and there is a lack of robust statistical data to support these treatments. Existing clinical research is relatively limited, with a shortage of large-scale, multi-center randomized controlled trials to validate their efficacy. To improve the accuracy and reliability of research conclusions, future clinical trials should focus on eliminating potential confounding factors, whether known or unknown. This will help provide more effective treatment strategies for clinical practice and promote the widespread application of these treatment methods. Additionally, it is necessary to explore in-depth those treatments that have shown good efficacy, are simple to perform, have no significant side effects, and are highly safe, in order to open up new treatment methods and approaches for facial paralysis.

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