

Advances in Auricular Point Pressing plus Music Therapy for Subjective Tinnitus

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Abstract: Subjective tinnitus is a common and intractable otological disease in clinical practice. Patients perceive abnormal sounds in their ears without external sound sources. This condition features a long course and high recurrence rate, and is often accompanied by anxiety, insomnia and other problems, which greatly impair patients' quality of life. Conventional Western medical monotherapies such as medication and sound masking yield poor long-term outcomes, and there is no radical cure available so far. Auricular point pressing therapy in traditional Chinese medicine (TCM), based on the auricular holographic theory, can dredge meridians, regulate qi and blood, and balance yin and yang. Music therapy can reshape auditory pathways and regulate emotions through auditory intervention. The combination of the two therapies can regulate physical conditions, repair the central nervous system and relieve negative emotions, serving as a distinctive integrated TCM and Western medicine regimen for tinnitus treatment. This paper reviews relevant domestic and overseas studies in recent years, summarizing the pathogenesis of tinnitus from both TCM and Western medicine perspectives, the individual efficacy and synergistic mechanism of the two therapies, as well as their current clinical application. It also analyzes existing problems in current researches and puts forward prospects, aiming to provide references for the standardized, targeted application and further in-depth study of this combined therapy.

Keywords: Subjective tinnitus, Auricular point pressing, Music therapy, Five-element music, Integrated traditional Chinese and Western medicine, Research progress.

1. Introduction

Subjective tinnitus is a prevalent chronic disease in the department of otolaryngology. In recent years, affected by factors such as staying up late and overwork, mental stress, noise exposure, and irregular schedules, its incidence has been rising year by year with a younger onset trend. Epidemiological data indicate that the overall global prevalence of tinnitus ranges from 11.9% to 30.3% [1], among which approximately 20% of patients experience persistent tinnitus symptoms that progress to chronic intractable subjective tinnitus. Modern medicine holds that the onset of subjective tinnitus is closely associated with damage to cochlear hair cells [2], inner ear microcirculation disorders, abnormal neural remodeling of the auditory cortex [3], and dysregulated emotional control of the limbic system. Clinically, treatment regimens commonly include neurotrophic therapy, microcirculation improvement, sedation and anti-anxiety medication, and sound masking. However, these approaches have drawbacks including slow therapeutic effects, significant individual differences, high long-term recurrence rates, and adverse drug reactions.

In traditional Chinese medicine, subjective tinnitus is categorized under the scope of "tinnitus". Its core pathogenesis lies in visceral disharmony, meridian obstruction and malnutrition of the ear orifices. Treatments emphasize holistic syndrome differentiation, combined internal and external therapies, and simultaneous regulation of body and mind. Auricular point pressing, a distinctive external therapeutic technique of traditional Chinese medicine, features simple operation, non-invasiveness and safety, and allows long-term intervention. It is widely adopted in the clinical rehabilitation of tinnitus, insomnia and emotional disorders. Music therapy consists of traditional Five-Element Music Therapy and modern auditory retraining music therapy.

It exerts dual effects of physical regulation and psychological counseling, and can effectively break the vicious cycle of "tinnitus - anxiety and insomnia - aggravated tinnitus". Numerous randomized controlled clinical trials have verified that the combined application of auricular point pressing and music therapy can significantly improve the clinical efficacy for subjective tinnitus, as well as alleviate tinnitus loudness, sleep quality and psychological status of patients compared with monotherapy.

2. Pathogenesis of Subjective Tinnitus in Traditional Chinese and Western Medicine

2.1 Pathogenesis in Modern Medicine

Modern medicine has not yet fully clarified the pathogenesis of subjective tinnitus. It is currently universally recognized that peripheral cochlear damage, central auditory remodeling, and emotional nerve disorder constitute the core pathogenesis [4]. At the peripheral level, long-term noise stimulation, ischemia and hypoxia, and inflammatory injury can damage outer hair cells in the cochlea, generating abnormal spontaneous electrical signals that transmit upward through the auditory pathway [5]. At the central level, continuous stimulation by peripheral abnormal signals triggers neuroplastic remodeling in the auditory cortex, hippocampus and limbic system. The brain becomes overly sensitive to abnormal acoustic signals, resulting in persistent perception of tinnitus [6].

Meanwhile, tinnitus can activate the excitation of the body's sympathetic nerves, triggering anxiety, depression and sleep disorders. In turn, negative emotions will further heighten the excitability of the auditory center, amplify the perception of tinnitus, and create a vicious cycle, which is the key reason why chronic tinnitus is hard to cure. Conventional Western

medicine treatments only target peripheral nerves and improve circulation, lacking interventions for central remodeling and emotional factors, and this is a major factor limiting their therapeutic effects.

2.2 Etiology and Pathogenesis of Traditional Chinese Medicine

The Ling Shu · Oral Inquiry states: “The ear is where all the meridians converge.” The ear serves as the gathering point for the twelve regular meridians and three hundred sixty-five collaterals, closely connected to organs such as the kidney, liver, heart, and spleen [7]. The kidney opens into the ear, while the liver and gallbladder meridians course along the sides of the ears. The state of qi and blood in the viscera directly determines the function of the ear. In traditional Chinese medicine, the pathogenesis of tinnitus is categorized into two types: excess and deficiency. Excess-type tinnitus is often caused by liver fire rising upward, phlegm-fire stagnation, qi stagnation with blood stasis, or external wind invasion. Emotional disturbances can lead to liver qi stagnation, which transforms into fire that ascends along the meridians to disturb the ear. Alternatively, improper diet may generate internal phlegm-dampness, blocking the ear collaterals and causing obstruction of the clear orifices, resulting in persistent ringing. Deficiency-type tinnitus is more common in middle-aged and elderly patients, primarily due to kidney essence depletion or dual deficiency of the heart and spleen. When kidney essence is insufficient, the sea of marrow becomes empty; when qi and blood are deficient, the ear loses its nourishment. This leads to failure of clear yang to ascend and turbid yin to descend, manifesting as tinnitus. In clinical practice, chronic subjective tinnitus often involves a mixture of excess and deficiency, with visceral imbalance and meridian obstruction being the core pathogenesis throughout the condition.

3. Mechanism of Monotherapy in the Treatment of Subjective Tinnitus

Current standardized clinical intervention protocols in common use: For auricular point pressing therapy, national standard acupoint locations are adopted, with cowherb seeds secured by adhesive tape; the seeds are replaced every 3 to 5 days. Patients perform self-pressing 3 to 5 times daily, 1 to 2 minutes per acupoint. Musical intervention is administered twice a day for 30 to 40 minutes each session; it works best for soothing the liver and unblocking collaterals in the morning and calming the mind to improve sleep before bedtime. A standard treatment course lasts 4 weeks, and chronic patients receive continuous intervention for 2 to 3 courses.

3.1 Therapeutic Mechanism of Auricular Point Pressing Therapy

Auricular point pressing therapy mainly uses Vaccaria seeds to press specific acupoints on the auricle as the primary intervention method. It exerts continuous mechanical stimulation on meridian acupoints to regulate zang-fu organs, unblock meridians, calm the nerves and resuscitate orifices, making it a classic external TCM therapy for tinnitus. The holographic theory established by Professor Zhang Yingqing [8] serves as the main theoretical foundation for auricular

point pressing therapy, which aligns with the TCM theories of “harmony between man and nature” and “inferring internal conditions from external manifestations”. The head is the convergence of all yang meridians. The *Spiritual Pivot-Clear and Turbid Yin-Yang* states that “when needling yang meridians, insert shallowly and withdraw quickly”, meaning yang meridians pertain to the exterior and require shallow needling, so this method can be applied to treat ear disorders. Phrases such as “proceed gently and slowly, retain the needle lightly for a long time to nourish qi” and “retain the needle gently for an extended period until qi arrives” indicate that longer needle retention is required for acupuncture treatment of chronic illnesses, aiming to continuously harmonize yin-yang, qi and blood and restore abundant qi and blood. Compared with acupuncture and other therapies, auricular point pressing delivers milder stimulation while sustaining therapeutic effects through persistent pressure on auricular acupoints. The core clinically selected acupoints mainly include Internal Ear, Kidney, Liver, Shenmen, Subcortex and Sympathetic. Stimulating the Kidney acupoint tonifies the kidney, replenishes essence and nourishes the ear orifice, addressing deficient tinnitus of kidney deficiency type. Stimulating the Liver and Triple Energizer acupoints soothes the liver, purges fire, moves qi and unblocks collaterals to relieve excess tinnitus triggered by liver fire and phlegm fire. Shenmen and Subcortex calm the mind, tranquilize nerves and regulate cerebral cortex function, alleviating insomnia and anxiety accompanied by tinnitus. The Sympathetic acupoint modulates autonomic nervous function and improves the circulation of qi and blood in auricular meridians. Syndrome-based matching of acupoints enables differentiated treatment of excess and deficiency conditions and simultaneous management of root causes and presenting symptoms.

Modern pharmacological mechanism: The auricle is rich in vagus nerve, sympathetic nerve endings and capillary networks. Sustained stimulation of acupoints can regulate the systemic autonomic nervous function through the vagus nerve-nucleus tractus solitarius pathway, dilate inner ear microvessels, improve the ischemic and hypoxic state of the inner ear, and repair damaged cochlear hair cells [9]. Meanwhile, it can modulate the function of the hypothalamic-pituitary-adrenal axis, reduce the body's stress level, inhibit abnormal excitation of the central nervous system, and decrease the generation of abnormal electrical signals that cause tinnitus.

3.2 Therapeutic Mechanisms of Music Therapy

At present, the music therapies clinically applied for tinnitus treatment mainly include Heidelberg Neuro-music Therapy (HNMT), Tailor-made notched music training (TMNMT), five-elements Music therapy (FEMT), etc., and their mechanisms of action cover multiple levels including physiology, psychology and central nerves.

Heidelberg Neuro-Music Therapy (HNMT) is an approach for chronic tinnitus that integrates strategies for regulating psychological states with the restoration of potential neural reorganization in the limbic system and extra-limbic auditory pathways [10]. Through this systematic and targeted acoustic stimulation, it exerts effects on the auditory processes of

tinnitus patients, enabling them to gradually filter out irrelevant information and focus on meaningful acoustic stimuli, thereby achieving desensitization to tinnitus. Tailored Notch Music (TMNM) refers to music produced by removing the energy band near the tinnitus frequency. By eliminating these overexpressed tinnitus frequencies from complex auditory stimuli, when auditory nerves process the sound stimuli stripped of tinnitus frequencies, they receive little to no sensory input at those frequencies. Adjacent nerves become activated and suppress frequencies within the notch, producing the so-called lateral inhibition effect [11]. Traditional Chinese Medicine Five-Element Music adheres to the theory of “five tones corresponding to five zang-organs”: the five tones of Jue, Zhi, Gong, Shang, and Yu correspond respectively to the liver, heart, spleen, lung, and kidney, allowing treatment based on syndrome differentiation. For tinnitus caused by liver fire, Jue-mode music is adopted to soothe the liver, regulate qi, and purge liver fire; for tinnitus due to kidney essence deficiency, Yu-mode music is used to tonify the kidney and consolidate the root; for tinnitus from dual deficiency of the heart and spleen, Gong-mode music is applied to invigorate the spleen, nourish the heart, calm the spirit and stabilize the mind, realizing an organic integration of music and the syndrome differentiation system of Traditional Chinese Medicine [12].

Tailor-made notched music training (TMNMT) is established based on the pathogenesis theory of auditory input deprivation. The theory demonstrates that central nervous inhibitory effect declines after auditory input deprivation, and neurons with peripheral frequencies in the auditory cortex are overexpressed abnormally, eventually inducing tinnitus. Fundamentally, degenerative damage of cochlear neurons triggers pathological neural remodeling of the cerebral auditory cortex, thus resulting in subjective tinnitus. Under physiological conditions, a lateral inhibition mechanism exists in people with normal hearing: while transmitting excitatory signals to higher-level neurons, auditory neurons exert antagonistic and inhibitory effects on adjacent neurons with homologous frequencies. After hearing loss occurs, the total number of auditory cortical neurons remains unchanged, whereas the nerve impulse pathway from the cochlea to the central nervous system is blocked, which markedly weakens the lateral inhibition of neurons on adjacent frequencies. Auditory cortical neurons deprived of peripheral signal input and the frequency topological structure of auditory cortex abnormally respond to sound wave signals from undamaged hearing areas, especially frequency bands at the edge of damaged auditory regions. Combined with the decreased lateral inhibition, neurons at the edge frequency bands of damaged areas are excessively activated abnormally [13]. In addition, the deprivation of sensory cell input can upregulate the functional sensitivity of auditory cortical neurons and induce central gain enhancement, which elevates the spontaneous discharge frequency of neurons and promotes synchronous abnormal neuronal activities above the perceptual threshold, forming the subjective perception of tinnitus eventually [14]. According to the central pathogenesis of tinnitus, enhancing the lateral inhibition of abnormally activated neurons and removing sound waves of specific frequency bands centered on patients' dominant tinnitus frequency can targetedly regulate abnormal central nerve activities and treat tinnitus. Existing basic studies have

verified that notched sound waves processed by notch filters can specifically inhibit the abnormal excitability of auditory cortical neurons in corresponding frequency bands and block the pathological neural circuit of tinnitus [15].

As an innovative musical intervention, a combined therapy integrating Western medical acoustic therapy mechanisms with the five-tone and five-element theories of traditional Chinese medicine (TCM) has been applied in the clinical diagnosis and treatment of tinnitus, which effectively expands the range of comprehensive treatment options for tinnitus. Classic TCM theories state that deficiency of both qi and blood in the spleen and stomach leads to malnutrition of the ancestral meridians, thereby inducing tinnitus. For tinnitus patients diagnosed with spleen-stomach weakness accompanied by anxiety, palace-tune music attributed to the spleen meridian is commonly adopted for clinical intervention, with representative pieces including *Spring River Flower Moon Night* and *Ode to Leisure Dwelling*. Such soothing melodies can regulate the qi movement of the spleen and stomach, correct dysfunctional transportation and transformation of the spleen and stomach, and restore the physiological function of ascending clear qi and descending turbid qi in the human body. From the perspective of five-element emotional treatment, emotions such as anxiety and fright pertain to the water element. Following the restrictive rule that earth restrains water, melodious and gentle palace-tune melodies can effectively relieve anxious and fearful emotions. For tinnitus caused by liver depression transforming into fire, fire-tune pieces such as *Step by Step* and *Happy Reunion* are recommended for musical therapy in accordance with the therapeutic principle of purging the child for excess syndromes. A relevant clinical study conducted continuous intervention on 80 patients with idiopathic tinnitus for 4 weeks, revealing that this therapy can significantly reduce patients' subjective tinnitus loudness and lower the Tinnitus Handicap Inventory (THI) score, with markedly superior clinical efficacy compared with conventional masking therapy [16].

4. Synergistic Therapeutic Mechanism of Auricular Point Pressing Combined with Music Therapy

The combined application of auricular point pressing and music therapy is not a simple superposition, but forms a three-dimensional collaborative treatment system featuring peripheral meridian unblocking, central repair, and simultaneous physical and mental treatment, which makes up for respective shortcomings and delivers remarkable synergistic effects. Auricular point pressing can improve inner ear microcirculation and repair peripheral cochlear damage, reducing the output of abnormal electrical signals at the source; music therapy can directly mask abnormal peripheral acoustic signals, doubly block the peripheral pathogenesis pathway of tinnitus, and rapidly relieve tinnitus symptoms. Stimulation of auricular points can regulate the excitability of the cerebral cortex and inhibit abnormal neural discharge; personalized notch music can remodel the disrupted neuroplasticity of the auditory center [17]. The combination of the two corrects central lesions from the dual dimensions of cortical regulation and neural remodeling, addressing the challenge of central fixation in chronic tinnitus.

The auricular points of Shenmen and Subcortex exert sedative and tranquilizing effects to physically regulate neural conditions; music therapy alleviates psychological stress through auditory emotional counseling, doubly improving patients' anxiety, depression and insomnia, and thoroughly breaking the vicious cycle between tinnitus and negative emotions. The combined therapy fully adheres to the principle of syndrome differentiation and treatment in traditional Chinese medicine (TCM). Customized auricular point prescriptions and five-element music regimens are matched according to patients' deficient or excessive syndrome types to realize individualized precise treatment, which is more consistent with the holistic concept of TCM compared with single standardized therapy.

5. Research Progress in Clinical Application

5.1 Overall Clinical Efficacy

Findings from multiple randomized controlled clinical trials and meta-analyses in recent years indicate that the total effective rate of auricular point pressing combined with music therapy for the treatment of subjective tinnitus can reach 78.5% to 91.2% [18], which is markedly superior to auricular point pressing alone (62.0%–73.0%), music therapy alone (60.0%–71.0%) [19], and conventional Western medical drug therapy (45.0%–58.0%).

Internationally recognized criteria are widely adopted for clinical efficacy evaluation, including the Tinnitus Handicap Inventory (THI), Visual Analogue Scale (VAS), Pittsburgh Sleep Quality Index (PSQI), Self-Rating Anxiety Scale (SAS), and Self-Rating Depression Scale (SDS). Studies have verified that the combined therapy can significantly reduce patients' tinnitus loudness, alleviate the severity of tinnitus-related disability, and simultaneously improve sleep and psychological status. Moreover, it is non-invasive, safe, free of toxic and side effects of medications, and boasts extremely high patient compliance.

5.2 Individualized Application for Different TCM Syndrome Types

Clinically, differentiated combined intervention regimens are formulated based on the traditional Chinese medicine classification of tinnitus, which greatly improves the accuracy of therapeutic effects. Hyperactivity of liver fire type: This is the most common excess syndrome tinnitus in clinical practice. Acupoints mainly include Liver, Triple Energizer, Shenmen and Inner Ear. Patients listen to Jue-tune music for 30 minutes every morning and evening over a 4-week treatment course. This therapy can quickly clear and purge liver fire and unblock ear collaterals, delivering the best curative effect for sudden, loud and pulsatile tinnitus, while markedly relieving irritability, insomnia and dream-disturbed sleep. Kidney essence deficiency type: Mostly seen in middle-aged and elderly patients with chronic tinnitus, manifested as persistent cicada chirping tinnitus. Major acupoints are Kidney, Endocrine, Occiput and Inner Ear. Listening to Yu-tune music before bed tonifies the kidney, replenishes essence and nourishes the ear orifices, showing remarkable improvement for intractable tinnitus that worsens at night, with a total effective rate of 89.7% after a 4-week

course of treatment. Dual deficiency of heart and spleen type: Common in fatigued and physically weak patients, characterized by faint, lingering tinnitus sounds. Primary acupoints cover Heart, Spleen, Shenmen and Subcortex. Combined with Gong-tune music to invigorate the spleen and calm the mind, this approach alleviates tinnitus as well as systemic accompanying symptoms such as lassitude, insomnia and palpitations significantly.

5.3 Differences in Therapeutic Effects of Tinnitus with Different Disease Courses

The efficacy of combination therapy is closely correlated with the duration of tinnitus, and stratified intervention presents distinct advantages. For acute tinnitus (duration < 3 months), lesions are mostly confined to the peripheral cochlea without consolidated central remodeling; the overall effective rate of combination therapy exceeds 90%, and clinical cure can be achieved in most patients. For subacute tinnitus (3–12 months), patients experience mild abnormal central remodeling, with an effective rate of approximately 82%; the therapy can markedly reduce tinnitus loudness and improve quality of life. For chronic intractable tinnitus (> 12 months), central neural remodeling has become consolidated, making complete radical cure difficult. Nevertheless, combination therapy still achieves an effective rate of around 75%, effectively alleviating the degree of tinnitus-related disability, and it serves as the optimal regimen for long-term rehabilitation management [20].

6. Shortcomings and Prospects

Current domestic and international clinical studies on auricular point pressing combined with music therapy show significant heterogeneity, and there are no unified industry standards. There is inconsistency across studies in the selection, modification, pressing duration and replacement cycle of auricular acupoints; standardized protocols are lacking for the song selection, volume, listening duration and intervention cycle of music therapy, and the applicable populations of five-element music and modern music have not been clearly defined, hindering clinical promotion and horizontal comparative research. Existing studies mainly focus on clinical efficacy observation, with a scarcity of large-sample, multi-center, long-term follow-up randomized controlled trial (RCT) studies, as well as insufficient animal experiments and molecular mechanism research. The specific regulatory mechanisms of the combined intervention on cochlear hair cell apoptosis, auditory cortex neurotransmitters and vagus nerve signaling pathways have not yet been clarified, and the molecular targets of their synergistic effects remain unclear, resulting in theoretical research lagging behind clinical application. Most studies fail to conduct stratified analysis based on tinnitus frequency, loudness, disease course, etiology and age, and lack systematic comparison of efficacy differences among different subtypes such as noise-induced tinnitus, presbycusis-related tinnitus and postoperative tinnitus, making it difficult to provide precise and individualized treatment guidance. The follow-up period of most clinical studies is only 1 to 3 months, without tracking data on long-term recurrence rates and prognostic outcomes beyond one year, which prevents objective evaluation of the long-term rehabilitation value of the

combined therapy.

For existing problems, future work should rely on evidence-based medicine to integrate available research data, collaborate with professionals to formulate unified operating standards and industrial specifications, clarify core parameters including auricular point compatibility, pressing methods, replacement cycles, as well as music tracks, volume and listening duration, and distinctly classify applicable populations and disease types for different music genres. Meanwhile, weaknesses in basic research need to be addressed; animal experiments and molecular biology investigations shall be carried out to analyze the specific mechanisms by which the combined therapy acts on auditory-related cells, neurotransmitters and signaling pathways, identify molecular targets responsible for the synergistic effects of the two therapies, and align theoretical research with clinical progress. In terms of clinical research design, high-quality randomized controlled trials (RCTs) with large sample sizes, multi-center participation and long-term follow-up should be actively conducted. Stratified controlled studies shall be implemented based on different tinnitus classifications, disease courses and patient ages to sort out efficacy patterns for each tinnitus subtype and establish individualized and precise diagnosis and treatment strategies. In addition, follow-up observation periods will be extended to continuously collect long-term prognosis and recurrence data for one year or longer, so as to comprehensively verify the long-term efficacy and application value of this therapy. The strengths of integrated traditional Chinese and Western medicine will be fully leveraged to continuously optimize intervention protocols, advance the standardization and normalization of the therapy, and provide more reliable and comprehensive treatment options for the clinical rehabilitation of subjective tinnitus.

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