Clinical Efficacy of Auricular Acupressure Combined with Acupoint Massage for Chronic Obstructive Pulmonary Disease

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Abstract

Objective To observe the effects of auricular acupressure with seeds combined with acupoint massage, a traditional Chinese medicine nursing technique, on pulmonary function, traditional Chinese medicine (TCM) symptoms, immune function, sleep quality, quality of life, and satisfaction in patients with chronic obstructive pulmonary disease (COPD). Methods A total of 80 COPD patients from our hospital, admitted between January 2023 and January 2024, were enrolled and divided into two groups of 40 each using a random number table. The control group received routine nursing care, while the observation group received additional auricular acupressure with seeds and acupoint massage. Improvements in pulmonary function, TCM symptoms, immune function, sleep quality, and quality of life were compared between the two groups, and patient satisfaction was surveyed. Results Before nursing intervention, there were no significant differences between the two groups in pulmonary function, TCM symptom scores, sleep quality, immune function, CAT scores, or LCQ scores ($P>0.05$). After nursing intervention, both groups showed improvement ($P<0.05$ compared with before intervention), with the observation group demonstrating more prominent improvement effects compared with the control group ($P<0.05$). The difference in nursing satisfaction between the observation group and control group was significant ($P<0.05$) as determined by chi-square test. Conclusion Auricular acupressure with seeds combined with acupoint massage is beneficial for improving pulmonary function, TCM symptoms, and sleep quality in COPD patients, promoting the enhancement of immune function and quality of life, and achieving high patient satisfaction.

Full Text

Clinical Efficacy of Ear Acupoint Pressing Combined with Acupoint Massage in the Treatment of Chronic Obstructive Pulmonary Disease

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Abstract

Objective: To investigate the effects of ear acupressure combined with acupoint massage on lung function, traditional Chinese medicine (TCM) symptomatology, immune function, sleep quality, quality of life, and patient satisfaction in individuals with chronic obstructive pulmonary disease (COPD).

Methods: Eighty COPD patients admitted to our hospital between January 2023 and January 2024 were enrolled and randomly divided into two groups of 40 patients each using a random number table. The control group received routine nursing care, while the observation group received routine care supplemented with ear acupressure and acupoint massage. Improvements in lung function, TCM symptoms, immune function, sleep quality, and quality of life were compared between the two groups, and patient satisfaction was assessed.

Results: Prior to intervention, no significant differences were observed between the groups in lung function parameters, TCM symptom scores, sleep quality, immune function, COPD Assessment Test (CAT) scores, or Leicester Cough Questionnaire (LCQ) scores ($P>0.05$). Following intervention, both groups showed significant improvements compared to baseline ($P<0.05$), with the observation group demonstrating more pronounced improvements than the control group ($P<0.05$). Chi-square analysis revealed significantly higher nursing satisfaction in the observation group compared to the control group ($P<0.05$).

Conclusion: The combination of ear acupressure and acupoint massage effectively improves lung function, alleviates TCM symptoms, enhances sleep quality, promotes immune function, and elevates quality of life in COPD patients, while achieving high levels of patient satisfaction.

Keywords: chronic obstructive pulmonary disease; ear acupressure; acupoint massage; pulmonary function; TCM syndromes

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Chronic obstructive pulmonary disease (COPD) represents a major global health challenge, ranking among the leading causes of mortality worldwide and posing

a severe threat to human health. In China, COPD constitutes the third leading cause of death, representing a critical public health priority requiring urgent attention [**?**]. The etiology of COPD is complex, involving multiple factors such as smoking, environmental pollution, and occupational exposures. Characterized by progressive, persistent airflow limitation that is not fully reversible, COPD significantly impairs patients' quality of life while imposing substantial burdens on families and society [**?**].

While clinical management of acute COPD exacerbations has achieved certain progress, treatment of stable COPD remains fraught with challenges. Conventional therapeutic approaches primarily rely on pharmacological interventions supplemented by oxygen therapy and rehabilitation training. Although these measures can alleviate symptoms, they possess inherent limitations. Long-term medication use may lead to adverse effects, while rehabilitation training alone yields variable outcomes in severely affected patients and demands high levels of adherence. Ear acupressure and acupoint massage, as traditional Chinese medicine (TCM) therapies, offer unique advantages in nursing care. According to TCM theory, the ear maintains close relationships with visceral organs and meridians, and stimulation of specific auricular points can regulate corresponding organ functions [**?**]. Ear acupressure involves applying vaccaria seeds or similar materials to auricular points, with regular compression to dredge meridians, harmonize qi and blood, and regulate organ function. Acupoint massage stimulates specific body points through manual manipulation to activate meridian qi and adjust physiological functions. To investigate the benefits of these interventions in COPD, we conducted a randomized controlled trial involving 80 COPD patients, with detailed methodology and findings presented below.

1.1 General Information

Eighty patients diagnosed with COPD and admitted between January 2023 and January 2024 were enrolled and randomly allocated into two groups of 40 patients each using a random number table method. The observation group comprised 22 males and 18 females, aged 45-75 years with a mean age of $62.28\$\pm8.62 years, disease duration of 5.70\pm1.22 years (range 2 - 8 years), and GOLD (Global Initiative for Chronic Obstructive Lung Disease) classification distribution of 13 cas$ 73 years with a mean age of $62.35\pm8.70 years, disease duration of 5.63\pm\$1.18$ years (range 2-7 years), and GOLD classification distribution of 11 cases at stage II, 23 at stage III, and 6 at stage IV. Statistical analysis of baseline demographic and clinical characteristics revealed no significant inter-group differences ($P>0.05$), confirming comparability. All patients and their families were thoroughly informed about the study protocol, provided written informed consent, and formally documented their participation.

1.2 Inclusion and Exclusion Criteria

Inclusion criteria comprised: (1) confirmed COPD diagnosis according to established consensus criteria [**?**]; (2) age between 40-80 years; (3) complete

medical records and information; and (4) sufficient physiological capacity and ability to understand and cooperate with treatment protocols.

Exclusion criteria included: (1) severe organ damage or dysfunction; (2) malignant tumors; (3) intolerance to nursing protocols or history of drug allergies; (4) cognitive or intellectual impairments; (5) psychiatric disorders or poor cooperation; (6) skin ulcerations; (7) systemic infectious diseases; (8) other respiratory diseases; and (9) history of lung surgery.

1.3 Interventions

1.3.1 Control Group: Patients received routine nursing care consisting of: (1) Condition monitoring with close observation of vital signs including temperature, pulse, respiration, and blood pressure, with particular attention to respiratory rate and rhythm and assessment of dyspnea severity. Sputum characteristics were monitored to detect disease progression, with immediate physician notification for fever or worsening dyspnea. (2) Respiratory care including encouragement of adequate hydration to thin secretions, and oxygen therapy via nasal cannula or face mask at 1-2 L/min for at least 15 hours daily, with monitoring for hypoxia improvement and prevention of oxygen toxicity or CO_2 retention. (3) Dietary guidance emphasizing high-calorie, high-protein, high-vitamin foods such as lean meat, fish, eggs, milk, fresh vegetables, and fruits, while avoiding spicy, greasy, or irritating foods. Patients were instructed to eat small, frequent meals to avoid exacerbating dyspnea and to control sodium intake to prevent edema. (4) Psychological support through attentive listening, emotional support, and patient education regarding COPD etiology, symptoms, treatment, and nursing measures to enhance disease awareness and self-management capabilities. (5) Respiratory function exercises including pursed-lip breathing (inhaling slowly through the nose for approximately 2 seconds while expanding the abdomen, then exhaling through pursed lips for 4-6 seconds) and diaphragmatic breathing (in supine, semi-reclining, or sitting position with one hand on the abdomen and one on the chest, expanding the abdomen during inhalation while keeping the chest stationary, then contracting the abdomen during exhalation at a 1:2 inhalation-to-exhalation ratio). These exercises were performed 3-4 sets daily, with 10-15 repetitions per set.

1.3.2 Observation Group: In addition to routine nursing care, patients received ear acupressure combined with acupoint massage. **(1) Ear acupressure** was performed with patients in a seated position. Selected auricular points included: Angle of the Antihelix, Wind Stream, Subcortex, Lung, Spleen, and Kidney. After routine disinfection of the corresponding auricular points, appropriately sized adhesive tape was used to apply vaccaria seeds to each point, with compression applied to patient tolerance for 2 minutes per point, 3-4 times daily. The seeds were retained for 3 days before removal, with bilateral auricular points applied alternately. **(2) Acupoint massage** targeted Zusanli, Gaohuang, Feishu, Neiguan, Dingchuan, and Qihai. Patients assumed supine or seated positions while each point received 5-10 minutes of massage, once in the

morning and once in the afternoon. Both groups received interventions for one month.

1.4 Observation Indicators

Improvements in lung function parameters, TCM symptoms, immune function, sleep quality, and quality of life were assessed before intervention and at one month post-intervention.

1.4.2 TCM Symptoms [?]: A self-designed questionnaire evaluated four domains: cough and sputum production, chest tightness and dyspnea, epigastric fullness and abdominal distension, and viscous sputum. Each item was scored 0-3 points, with total scores ranging 0-12 points and higher scores indicating more severe symptoms.

1.4.3 Immune Function: Five milliliters of fasting venous blood were collected from all participants into anticoagulant tubes and serum separation was completed within 2 hours. Centrifugation parameters were 3000 r/min for 10 minutes. Serum immune function indicators including $CD3^+$, $CD4^+$, and $CD4^+/CD8^+$ ratio were measured using a DiagCyto 6C2L flow cytometer (Fantai Biotechnology Co., Ltd., Zhejiang Medical Device Registration No. 20212220112).

1.4.4 Sleep Quality: The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep improvement. This scale comprises 7 components with 19 self-evaluation items, each scored 0-3 points, with total scores ranging 0-21 points and higher scores indicating better sleep quality.

1.4.5 Quality of Life: The Leicester Cough Questionnaire (LCQ) was administered, covering 3 dimensions and 19 items, with each dimension scored 1-7 points and a maximum total score of 21 points, where higher scores correlate with better quality of life.

1.4.6 COPD Assessment: The COPD Assessment Test (CAT) comprises 8 items addressing cough, sputum, chest tightness, and related symptoms, with scores ranging 0-40 points and higher scores indicating poorer quality of life.

1.4.7 Patient Satisfaction: A self-designed departmental questionnaire was used, incorporating 20 items relevant to nursing practice with high feasibility and practicality. Each item was scored 1-5 points, with a total possible score of 100 points. Satisfaction was defined as the sum of "very satisfied" ($ $80 points) and "basically satisfied"(60-79 points) responses, while scores <60 points indicated dissatisfaction.

1.5 Statistical Methods

All data were entered into SPSS 26.0 for processing and analysis. Categorical and continuous variables (with normal distribution) were expressed as percentages (%) and mean ± standard deviation (−x ±s), respectively. Chi-square

tests were used for categorical data and t-tests for continuous data, with P<0.05 considered statistically significant.

Results

2.1 Comparison of Lung Function Between Groups

SPSS 26.0 analysis revealed no significant inter-group differences in lung function parameters before intervention (P>0.05). Both groups demonstrated improvement post-intervention, with the observation group showing significantly greater improvement (P<0.05). See Table 1 .

Table 1 Comparison of Lung Function Between Groups (mean ± SD) | Group | n | FEV1 (L) | PEF (L/s) | FVC (L) | |—-|–|——-|——-|——| | Observation | 40 | 1.72$±0.33|2.62±0.32∗|4.79±0.74|5.88±0.67∗|2.39±0.12|3.22±0.32∗ ||*Control*|40|1.67±0.26|1.96±0.28∗|4.83±0.68|5.32±0.56∗|2.35±0.21|2.66±$0.28* | | P | | <0.001 | <0.001 | <0.001 |

Note: *P<0.05 compared with pre-intervention values.

2.2 Comparison of TCM Symptom Scores Between Groups

Intra-group comparisons revealed significant reductions in TCM symptom scores post-intervention (P<0.05). Inter-group analysis demonstrated that the observation group achieved superior improvement compared to both the control group and pre-intervention baseline (P<0.05). See Table 2 .

Table 2 Comparison of TCM Symptom Scores Between Groups (points, mean ± SD) | Group | n | Cough & Sputum | Chest Tightness & Dyspnea | Epigastric Fullness & Distension | Viscous Sputum | |—-|–|———-|——————|——————————-|———-| | | | Pre | Post | Pre | Post | Pre | Post | Pre | Post | | Observation | 40 | 2.52$±0.32 ∗ |1.04±0.63 ∗ |2.35±0.37 ∗ |1.01±0.42 ∗ |2.64±0.35 ∗ |1.02±0.41 ∗ |2.74±0.32 ∗ |1.12±0.38 ∗ ||*Control*|40|2.48±0.38 ∗ |1.35±0.59 ∗ |2.41±0.36 ∗ |1.73±0.41 ∗ |2.59±0.36 ∗ |1.32±0.32 ∗ |2.72±0.32 ∗ |1.45±$0.32* | | P | | <0.001 | <0.001 | <0.001 |

Note: *P<0.05 compared with pre-intervention values.

2.3 Comparison of Immune Function Indicators Between Groups

SPSS 26.0 analysis showed no significant inter-group differences in immune function parameters before intervention (P>0.05). Both groups exhibited post-intervention improvement with significant intra-group differences (P<0.05), while inter-group analysis revealed significantly greater improvement in the observation group (P<0.05). See Table 3 .

Table 3 Comparison of Immune Function Indicators Between Groups (mean ± SD) | Group | n | $CD3^+$ (%) | $CD4^+$ (%) | $CD4^+/CD8^+$ | |—-|–

|——-|——-|———| | | | Pre | Post | Pre | Post | Pre | Post | | Observation | 40 | 52.24$±2.65|59.58±3.53 ∗ |22.36±3.23|28.76±3.82 ∗ |0.97±0.14|1.82±0.23 ∗ ||*Control*|40|52.08±2.81|56.24±3.86∗|22.02±3.31|24.62±3.79∗|0.94±0.17|1.38±$0.18* | | P | | <0.001 | <0.001 | <0.001 |

Note: *P<0.05 compared with pre-intervention values.

2.4 Comparison of Sleep Quality and Quality of Life Between Groups

No significant inter-group differences in sleep quality or quality of life were observed pre-intervention (P>0.05). Post-intervention intra-group analysis revealed decreased PSQI and CAT scores alongside increased LCQ scores. Inter-group comparisons demonstrated superior outcomes in the observation group (P<0.05). See Table 4 .

Table 4 Comparison of Sleep Quality and Quality of Life Between Groups (points, mean ± SD) | Group | n | PSQI | LCQ | CAT | |—-|—|—|—-|—-|—-| | | | Pre | Post | Pre | Post | Pre | Post | | Observation | 40 | 17.67$±1.15|4.10±1.05 ∗ |7.36±1.23|17.76±1.22 ∗ |28.97±2.14|10.82±1.34 ∗ ||*Control*|40|17.58±1.20|8.13±1.23∗|7.02±1.31|13.62±1.39∗|28.94±2.17|16.38±$2.18* | | P | | <0.001 | <0.001 | <0.001 |

Note: *P<0.05 compared with pre-intervention values.

2.5 Comparison of Nursing Satisfaction Between Groups

The observation group demonstrated significantly higher nursing satisfaction compared to the control group (P<0.05). See Table 5 .

Table 5 Comparison of Nursing Satisfaction Between Groups (%) | Group | n | Very Satisfied | Basically Satisfied | Dissatisfied | Total Satisfaction (%) | |—-|—|———-|————|———-|————| | Observation | 40 | 24 (60.00) | 14 (35.00) | 2 (5.00) | 38 (95.00) | | Control | 40 | 17 (42.50) | 15 (37.50) | 8 (20.00) | 32 (80.00) | | P | | | | | <0.001 |

Discussion

COPD is a chronic respiratory disease characterized by progressive, incompletely reversible airflow limitation that poses a significant clinical challenge. The pathogenesis involves complex mechanisms including airway inflammation and airway remodeling [**?**], with destruction of lung parenchyma and pulmonary vascular remodeling contributing to disease development. Progressive symptoms of cough, sputum production, and dyspnea, punctuated by recurrent acute exacerbations, severely impair patients' daily activities and physical and mental health.

Conventional nursing models for COPD primarily focus on condition monitoring, health education, dietary guidance, and respiratory care. While these measures provide some symptomatic relief, they often fall short in managing severe

dyspnea and cough, lack individualized approaches, and fail to address diverse patient needs. According to TCM theory, the lung governs qi and respiration. Invasion by external pathogens or improper diet can impair lung function, leading to spleen dysfunction and phlegm production that obstructs lung collaterals. This phlegm obstruction further exacerbates lung qi stagnation, manifesting as cough, wheezing, and chest tightness that become recurrent and protracted [**?**]. TCM nursing techniques emphasize the holistic nature of the human body, aiming to enhance immunity and improve lung function through organ regulation, meridian dredging, and qi-blood harmonization.

Ear acupressure and acupoint massage, as essential components of external TCM therapies, offer advantages of simple operation, proven efficacy, and minimal adverse effects, and have been widely applied as adjunctive treatments for various diseases. Ear acupressure stimulates auricular points through compression and kneading of medicinal seeds to dredge meridians, harmonize qi and blood, and regulate organ function. Acupoint massage, rooted in meridian theory, stimulates body surface points to activate meridian qi and modulate organ function. Our results demonstrate that the observation group achieved significant improvements in lung function and TCM symptom scores, reflecting the therapeutic benefits of this combined approach.

The ear maintains intimate connections with visceral organs and meridians. Auricular stimulation with vaccaria seeds can regulate lung, spleen, and kidney functions [**?**]. This stimulation transmits through the nervous system to modulate physiological functions, influencing the autonomic nervous system to regulate respiratory rate and depth, thereby alleviating dyspnea. Acupoint massage dredges meridian qi and blood while regulating immune function. Massage of Feishu, Neiguan, and Dingchuan points promotes pulmonary blood circulation, increases oxygen supply, and reduces inflammatory responses. This stimulation activates the immune system, enhances resistance to pathogens, and reduces respiratory infections, thereby alleviating COPD symptoms [**?**]. The combined approach produces synergistic effects that can be tailored to individual patients, enhancing nursing specificity and effectiveness.

Comparison of immune function indicators revealed more significant improvements in the observation group, demonstrating the immunomodulatory effects of this nursing approach. The Angle of the Antihelix point clears heat and resolves toxins while calming the liver and extinguishing wind; Wind Stream unblocks collaterals, relieves pain, and activates blood to dispel wind; Subcortex calms the mind and relieves pain; the Lung point regulates qi; the Spleen point fortifies spleen function; and the Kidney point tonifies kidney essence and accepts qi. Stimulation of these points modulates immune function through multiple pathways. First, by regulating organ function, it enhances the physiological capacity of the lung, spleen, and kidney, thereby improving overall immunity. Second, by modulating the nervous system and psychological state, it reduces stress responses and creates a favorable internal environment for immune function. For acupoint massage, Zusanli regulates the spleen and stomach,

enhances digestion and absorption, and strengthens vital qi [**?**]. Gaohuang and Feishu points directly act on lung meridians to regulate lung qi and promote blood circulation, thereby enhancing pulmonary function. Neiguan regulates cardiac function and promotes circulation to improve systemic nutrient supply, while Dingchuan alleviates asthma symptoms, reduces airway resistance, and improves respiratory function.

The observation group also demonstrated greater improvements in quality of life and sleep quality, with higher satisfaction rates, indicating that ear acupressure and acupoint massage effectively enhance these outcomes. COPD patients frequently experience nocturnal cough and dyspnea that disrupt sleep. These therapies regulate organ function and meridian qi-blood by stimulating specific points, improving lung, spleen, and kidney function to reduce the frequency and severity of nocturnal symptoms and create conditions for restful sleep. Furthermore, sleep quality is closely related to nervous system function. These modalities regulate autonomic nervous system balance between sympathetic and parasympathetic activity, promoting relaxation conducive to sleep initiation and maintenance. Stimulation of points such as Neiguan calms the mind, relieves tension, and improves sleep, thereby enhancing quality of life [**?**]. As non-pharmacological therapies, ear acupressure and acupoint massage avoid medication side effects, are simple to perform, and are well-accepted by patients, contributing to high satisfaction rates.

This study has several limitations. The relatively small sample size may not fully capture individual variations and could affect generalizability. Additionally, the follow-up period was relatively brief, and longer-term functional recovery requires extended observation. Future research should expand sample sizes, conduct multicenter studies, prolong follow-up duration, and enrich observation indicators to comprehensively evaluate the effects of ear acupressure and acupoint massage from multiple dimensions, providing stronger evidence for clinical application.

In summary, the combination of ear acupressure and acupoint massage as adjunctive therapy for COPD produces significant improvements in lung function, TCM symptoms, and immune function while enhancing sleep quality and quality of life, achieving high patient satisfaction. This approach warrants clinical consideration and adoption.

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Note: Figure translations are in progress. See original paper for figures.