

Case Report

One Case of Spontaneous Massive Pneumothorax Treated by Channel Tendon Therapy

Li Zhang^{1,2}, Jinghua Wu^{3,4}, Bixia Wu² and Wenbin Zheng^{2*}

¹Department of Radiology, South China Hospital of Shenzhen University, China

²Department of Radiology, The Second Affiliated Hospital of Shantou University Medical College, China

³Beijing Jinrou Institute of Traditional Chinese Medicine, China

⁴Shantou Jinrou Institute of Traditional Chinese Medicine Technology, China

Abstract

Spontaneous pneumothorax is a common and frequently-occurring disease in clinic. In the treatment of spontaneous pneumothorax, Western medicine is the main method, and a small amount of pneumothorax is treated conservatively, including Western medicine and traditional Chinese medicine. This article introduces a case of spontaneous massive pneumothorax, which was significantly cured by Channel Tendon Therapy.

Keywords: Channel Tendon Therapy; Spontaneous pneumothorax; Pneumothorax/therapy; Traditional Chinese medicine; Case report

Introduction

Spontaneous pneumothorax is a disease in which the visceral pleura rupture without the influence of trauma or human factors, and abnormal gas exists in the pleural space (between the lung and chest wall). It is divided into primary and secondary according to whether there is lung disease [1,2]. According to its clinical symptoms and signs, combined with imaging examination, the diagnosis can be easily confirmed, and pneumothorax can be graded according to the imaging manifestations. However, for its treatment, the curative effect of western medicine conservative treatment is limited, and there may be complications in invasive treatment and surgery. Traditional Chinese medicine can play a role in the treatment of a small number of pneumothorax, but the effect of a large number of pneumothorax is not good. This article reports a case of spontaneous massive pneumothorax cured by Channel Tendon Therapy, which had achieved significant curative effect, and aims to explore the value of Channel Tendon Therapy in the treatment of spontaneous pneumothorax.

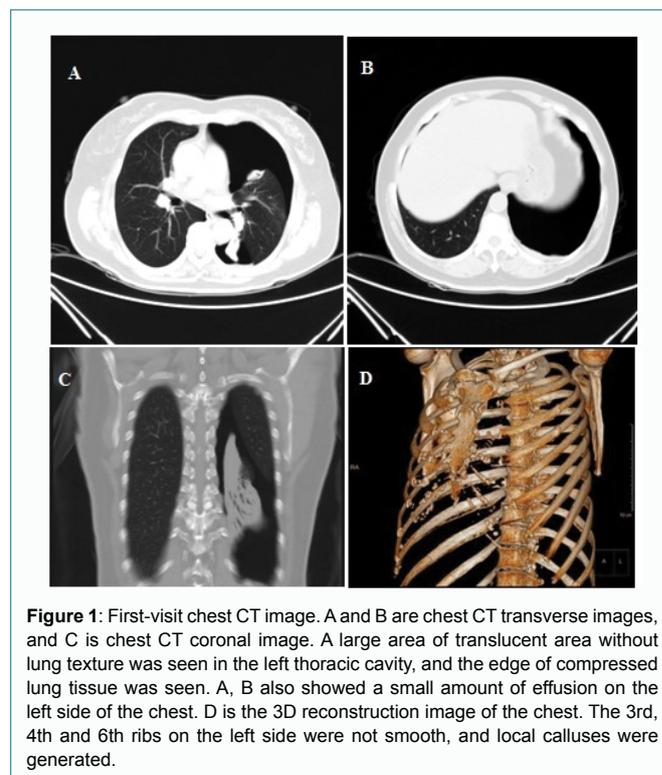
Case Presentation

The patient is a 64-year-old female who came to the hospital with "cough for 7 days and chest tightness and shortness of breath for 3 days". The patient developed a severe cough after overexertion 7 days ago, and in the past 3 days she had wheezing and dyspnea when going upstairs, complaining of relief after rest.

She had a history of hypertension for 30 years, irregular

medication, unknown medication and blood pressure control, no respiratory disease and smoking history.

Physical examination: body temperature (T): 36.6°C, pulse (P): 90 beats/min, respiratory rate (R) 20 breaths/min, Blood Pressure (BP): 145/80 mmHg. The left thorax was slightly full, respiratory movements and voice tremor were diminished, the trachea was displaced to the right, the left lung sounded drum on percussion, and the left lung breath sounds were diminished (Figure 1).



Imaging examination: Chest CT Figure 1 shows

1. Left pneumothorax (left lung compressed about 65%) and left

Citation: Zhang L, Wu J, Wu B, Zheng W. One Case of Spontaneous Massive Pneumothorax Treated by Channel Tendon Therapy. *Ann Phys Med Rehabil.* 2023; 2(1): 1008.

Copyright: © 2023 Li Zhang

Publisher Name: Medtext Publications LLC

Manuscript compiled: Mar 02nd, 2023

***Corresponding author:** Zheng Wen-Bin, Department of Radiology, The Second Affiliated Hospital of Shantou University Medical College, 69 North, Shantou 515000, China, E-mail: hwenb@126.com

- lower lobe atelectasis;
2. A small amount of left pleural effusion;
 3. Left pleural thickening;
 4. Old fractures of the 3rd, 4th, and 6th ribs on the left side.

Preliminary diagnosis:

1. Left pneumothorax;
2. A small amount of left pleural effusion;
3. Left pleural thickening;
4. Old fractures of the 3rd, 4th, and 6th ribs on the left side;
5. Hypertension grade I (Low risk).

The patient was elderly and resisted invasive treatment. Considering that the patient's general condition was acceptable and the condition was relatively stable, the Channel Tendon Therapy (Wu Jinghua's tendon hand therapy [3,4]) was used for conservative treatment. Focus on finding tendon knot lesions along the seven meridians from Foot Taiyin, Foot Taiyang, Foot Yangming, Foot Shaoyang, Hand Taiyin, Hand Jueyin, Hand Shaoyin to the chest, reflexology of the limbs was carried out by needle acupuncture and tendon-regulating massage, starting from the toes of foot Sanyang and foot Taiyin, and from the finger starting point of hand Sanyang to focus on tendon relaxation and tendon plucking reflexes to the chest to repair the tendon knot, 1 time/day, 40 to 50 minutes/time. After 3 consecutive treatments (days), the patient's cough and chest tightness were significantly reduced. After 7 days, the chest CT Figure 2 shows that the left pneumothorax was significantly absorbed, the left lower lobe atelectasis was improved (The left lower lung was reduced from 65% to 30%), and the left pleural effusion was roughly the same as before.

In view of the obvious reduction of symptoms and rapid absorption of pneumothorax, the second course of treatment (tendon relaxation and tendon extraction mainly) was continued, continuous treatment for 5 times (1 time/day), the patient's cough and chest tightness continued to reduce. After 14 days (21 days after the first diagnosis), chest CT Figure 3 shows that the left pneumothorax was significantly absorbed, the left lower lobe was well reexpanded (The left lung compression was only about 5%), and a small amount of effusion in the left pleural cavity was absorbed.

Continue to give the third course of treatment (mainly for regulating tendons and treating tendons) for 10 times (1 time/day), and the symptoms such as cough and chest tightness disappeared completely. After 35 days of first diagnosis, chest CT Figure 4 shows that the left pneumothorax and pleural effusion were completely absorbed and the left lung was completely reexpanded.

Discussion

The name of pneumothorax does not exist in traditional Chinese medical texts, but according to the symptoms of chest tightness, chest pain and cough, it is included in "chest paralysis", "cough" and "asthma", "lung distension" and so on. There are many records of it in Chinese medicine classics, such as "lung distension, fullness and asthma cough (Ling Shu - Theory of Distension)", "lung distension and cough, or left or right, sleepless"; "those who have cough and lung distension, it is difficult to treat ("Danxi Xinfu- cough"), "chest arthralgia, wheezing, saliva, chest and back pain, shortness of breath (synopsis of Jinkui)" and so on [5,6].

Pneumothorax is a disease caused by visceral pleural rupture and gas entering the pleural cavity. The repair of visceral pleura and the absorption of pleural cavity gas are very important in the treatment. According to the statement on the diagnosis and treatment of pneumothorax issued by the European Respiratory Society in 2015: in addition to tension pneumothorax, the clinical diagnosis and treatment plan is determined according to the patients' clinical symptoms [1]. Therefore, conservative treatment can be used for patients with mild clinical symptoms or stable vital signs. However, with conventional conservative treatment, the free gas in the chest is absorbed at a rate of 1.25% to 2.2% per day [7-10], and the gas absorption rate is relatively slow. As an invasive operation, thoracic puncture and aspiration and closed thoracic drainage, which are more efficient and suitable for severe patients, may also cause complications such as subcutaneous emphysema, reexpansion pulmonary edema, secondary hemothorax and so on [11], in addition, thoracic aspiration or closed thoracic drainage increases the incidence of pleural adhesion [12] and has a higher recurrence rate than conservative treatment [13]. Pleural fixation has a lower recurrence rate than simple pleural drainage, but it can cause side effects such as fever, pain and pleural effusion due to pleurisy [14]. Thoracotomy and thoracoscopic surgery are used to remove the primary focus, which can quickly and effectively cure patients and reduce the recurrence rate of spontaneous pneumothorax, but there are also complications such as air leakage, incision infection, atelectasis and so on [15], and the cost is higher.

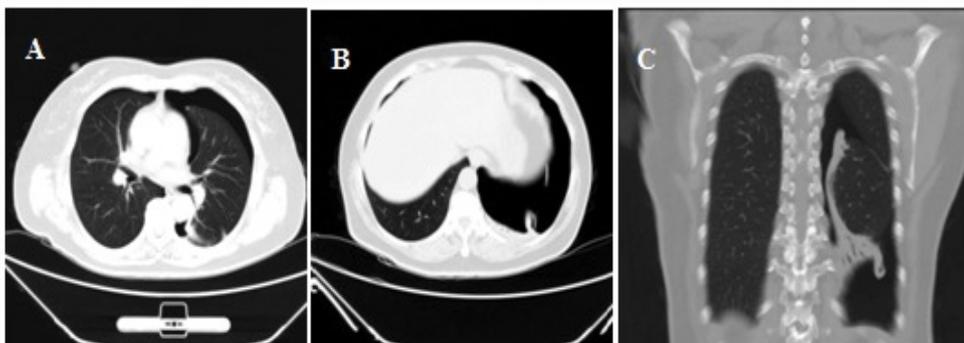


Figure 2: Reexamination of chest CT images 7 days after the first diagnosis. A and B are chest CT transverse images, and C is chest CT coronal image, it can be seen that the translucent area of the left thoracic cavity without lung texture was reduced, and the left lower lung was reexpanded. A, B also showed a small amount of left pleural effusion was roughly the same as before.

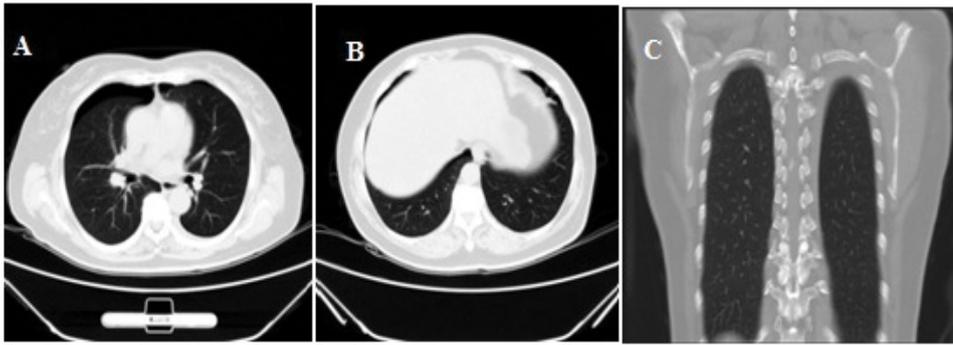


Figure 3: Reviewed chest CT image 21 days after the first consultation. A and B are chest CT transverse images, and C is chest CT coronal image, it can be seen that the translucent area of the left thoracic cavity without lung texture was further reduced, and the left lower lung was reexpanded. A, B showed a small amount of left pleural effusion absorption than before.

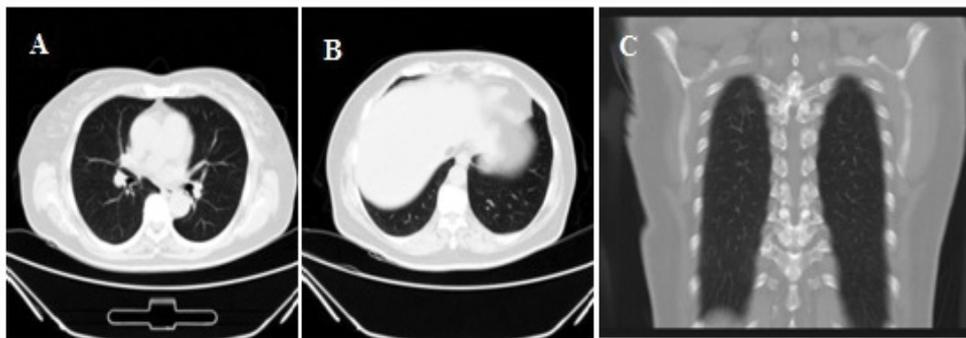


Figure 4: Review of chest CT image 35 days after the first diagnosis. A and B are chest CT transverse images, and C is chest CT coronal image, it can be seen that the left chest gas was basically absorbed and the left lung was completely reexpanded. A, B showed left pleural effusion basic absorption.

Under this background, the consensus of traditional Chinese medicine experts in diagnosis and treatment of pneumothorax in 2019 proposed to use the theory of syndrome differentiation of traditional Chinese medicine, supplemented by western medicine [16], but "every medicine has its side effect". Liver injury and kidney injury caused by traditional Chinese medicine [17-18] should not be underestimated, so they should be used with caution.

According to the theory of Tendons, the twelve tendons and the twelve meridians go together, the path of the meridians basically follows the extension of nerve fibers, blood vessels and lymphatic vessels, and the tendons are connected with these three tubular tissues and become the carrier of interstitial fluid. Channel Tendon Therapy uses comprehensive mechanical stimulation to eliminate foci (guide stilts and acupuncture therapy) and other techniques to deal with the patient's tendon nodes; it affects the activity of the three tubular carriers and connective tissues of nerve fibers, blood vessels and lymphatic vessels to achieve the therapeutic effect. Based on the theory of Channel tendon, in the human body's twelve meridian tendons (hand and foot three yin and three yang meridians), foot Sanyang (foot Taiyang, foot Yangming, foot Shaoyang), foot Shaoyin and hand Sanyang (hand Taiyang, hand Yangming, hand Shaoyang), hand Sanyin (hand Taiyin, hand Jueyin, hand Shaoyin) meridians are all above the chest and back. That is, the injury of the chest meridian tendons can also block the corresponding meridians, especially the contracture of the meridian tendons, the stasis will inevitably hinder the operation of meridian qi and blood, thus leading to the disease of the corresponding meridians. Meridian nourishes organs and superficial orifices, so meridian diseases are often accompanied by

visceral, limb, craniofacial and superficial orifice diseases, such as lung, pericardium, heart and other viscera diseases [19].

In this case, the patient had a history of old rib fracture, which caused chest tendon injury due to excessive breath holding force, induced pleural tear in the visceral layer of pleural adhesion of the original fracture, resulting in spontaneous pneumothorax and sharp changes in pulmonary pressure, the patient had symptoms such as cough, chest tightness, dyspnea and so on. There are multiple methods for the treatment of spontaneous pneumothorax, and the treatment emphasizes individualization, although the patient had a large number of pneumothorax, she had no underlying lung disease, normal primary lung function and stable vital signs, so she tried conservative treatment. Through Wu Jinghua's external treatment of meridian tendons in traditional Chinese medicine, the focus is to find the focus of tendons by following seven meridian tendons to the chest, using filiform needles, regulating tendons, etc., to loosen tendons from the starting point of foot Sanyang, foot Taiyin, and hand Sanyin. Because the seven meridian tendons are closely related to the thoracic structure, such as the foot Taiyin (the starting point of the big toe of the foot, which governs the intercostal muscles in the chest), the foot Taiyang (the starting point of the little toe of the foot, which governs the forechest, axilla, and back), and the foot Yangming (starting from the third toe of the foot, respectively, through the sternoclavicular joint to the face, and to the tenth rib of the back as the end point), Foot Shaoyang (starting point of the fourth and fifth toes of the foot, through the lateral chest to the lateral side of the head), hand Taiyin (starting thumb fingertip, via the forearm and the upper arm to the clavicle, acromioclavicular joint, anterior thoracic intercostal

muscle and inferior intercostal muscle, to the sternoclavicular joint), hand Jueyin (starting middle finger fingertip, passing through the forearm to the armpit and the surface of the ribs), hand Shaoyin (on the starting point of the little finger, near the fifth rib attached to the thoracic vertebrae through the medial side of the arm. And enter the chest from the axilla). Through the reflection of the tendon to the chest, it can repair the tendon knot, straighten out the gas channel, restore the space, restore the normal structure, achieve the recovery of the soft tissue function of the chest wall, improve the gas pressure gradient between the pleural cavity and the tissue of the pneumothorax patient, and promote the absorption of nitrogen and other gases and liquids in the chest cavity [20]. The characteristics of this method are as follows: recuperating qi and blood, breaking the morbid balance of the human body, restoring the original spatial structure of the body, restoring the function of the human body, regulating meridians and bones, unobstructing blood vessels, and thus the curative effect of self-healing of the disease. In this case, the amount of pneumothorax was 65%, which was a large amount of pneumothorax. After 3 courses of treatment with Channel Tendon Therapy, the left lung was reduced from 65% to 30% to 5%, and finally completely reexpanded. The absorption rate of pneumothorax is 1.79 % to 5.00%/day without oxygen inhalation and the patient keeps free activity. However, conventional conservative treatment generally absorbs gas at a rate of 1.25%/day without oxygen inhalation [7], and 25 % pneumothorax takes about 20 days to be completely absorbed [21]. It can be seen that the effect of Channel Tendon Therapy in the treatment of pneumothorax is significant. Non-treatment time patients can move freely and non-invasive characteristics are more likely to be accepted by patients.

To sum up, in the conservative treatment of spontaneous pneumothorax, Channel Tendon Therapy has great potential to promote pleural gas absorption and accelerate pleural repair, and provides an effective and non-invasive treatment for patients who are not suitable for or reject invasive treatment, and improve the quality of life of patients during the disease.

References

1. Tschopp JM, Bintcliffe O, Astoul P, Canalis E, Driesen P, Janssen J, et al. ERS task force statement: diagnosis and treatment of primary spontaneous pneumothorax. *Eur Respir J*. 2015;46:321-35.
2. Henry M, Aronld T, Harvey J. BTS guidelines for the management of spontaneous pneumothorax. *Thorax*. 2003;58(Suppl 2):ii39-52.
3. Zhang ZH. The Department of detoxification of traditional Chinese Medicine in 307 Hospital uses Channel tendon therapy to cure stubborn diseases that have been plagued for many years. *Health News*. 2009.
4. Gao QL. A Study of the Mechanism and Effect of Channel Tendon Therapy on the cerebral blood and Functional Structure in Healthy Human Brain by ASL and rfMRI. Shantou: Shantou University. 2020.
5. Li WZ, Liu CW, Zhu ZG. Treating one case of spontaneous pneumothorax by the Jianpi Shengji therapy. *Clinical journal of Chinese medicine*. 2019;11(29):27-28.
6. Shi L, Wu XQ, Cheng X. A survey of traditional Chinese medicine research on pneumothorax. *Jiangxi journal of traditional Chinese medicine*. 2002;33(3):59-60.
7. Ghezel-Ahmadi D, Bolukbas S, Fischer T, Ghezel-Ahmadi V, Schirren J. [Pneumothorax, what kind of therapy is necessary? A clinical overview]. *Zentralbl Chir*. 2012;137(3):214-22.
8. Flint K, Al-hillawi A, Johnson NM, Clague HW, El-Ansary EH, Bush A, et al. Conservative management of spontaneous pneumothorax. *Lancet*. 1984;323(8378):687-9.
9. Kircher LT Jr, Swartzel RL. Spontaneous pneumothorax and its treatment. *J Am Med Assoc*. 1954;155(1):24-9.
10. Kelly AM, Loy J, Tsang AYL, Graham CA. Estimating the rate of reexpansion of spontaneous pneumothorax by a formula derived from computed tomography volumetry studies. *Emerg Med J*. 2006;23(10):780-2.
11. Porcel JM. Chest Tube Drainage of the Pleural Space: A Concise Review for Pulmonologists. *Tuberc Respir Dis (Seoul)*. 2018;81(2):106-15.
12. Yu WK, Li YC, Zhang DR. Effects of different exhaust modes on spontaneous pneumothorax with pleural adhesion. *Int J Respiration*. 2014;34(12):935-938.
13. Brown SG, Ball EL, Macdonald SP, Wright C, McD Taylor D. Spontaneous pneumothorax: a multicentre retrospective analysis of emergency treatment, complications and outcomes. *Intern Med J*. 2014;44(5):450-7.
14. Schnell J, Beer M, Eggeling S, Gesierich W, Gottlieb J, Herth FJF, et al. Management of Spontaneous Pneumothorax and Post-Interventional Pneumothorax: German S3 Guideline. *Respiration*. 2019;97(4):370-402.
15. Zheng J, Zhang SY, Huang XR. Comparison of thoracoscopic surgery and traditional thoracotomy in the treatment of spontaneous pneumothorax. *Chinese Journal of Clinical Rational Drug Use*. 2017;10(8):118-9.
16. Chen ZB, Lan L. Expert Consensus on TCM Diagnosis and Treatment of Pneumothorax. *Journal of Emergency Traditional Chinese Medicine*. 2019;28(2):189-91.
17. Cai HD. Pay attention to liver injury caused by traditional Chinese medicine and related health products. *Adverse Drug Reactions Journal*. 2018;20(3):161-2.
18. Shen YP. Renal damage caused by Chinese herbal medicine. *Chinese Journal of Nephrology*. 2005;21(3):121-2.
19. Xue LG. Chinese Channel Tendons. Beijing: Traditional Chinese Medicine Ancient Books Publishing House. 2015:589.
20. Macduff A, Arnold A, Harvey J, BTS Pleural Disease Guideline Group. Management of spontaneous pneumothorax: British Thoracic Society Pleural Disease Guideline 2010. *Thorax*. 2010;65(Suppl 2):iii18-31.
21. Wang HL. Treatment of primary spontaneous pneumothorax. *Int J Respiration*. 2012;32(22):1756-60.