

Case Report

Efficacy of Channel Tendon Therapy for Spontaneous Pneumothorax

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

Objective: To investigate the clinical advantages of Channel Tendon Therapy for the treatment of spontaneous pneumothorax.

Methods: We retrospectively and comparatively analyzed the effects of different therapies in 65 patients with spontaneous pneumothorax, including 11 patients who received Channel Tendon Therapy, 21 patients who received conservative medical treatment, and 33 patients who underwent closed chest drainage. The mean daily absorption rate of pneumothorax as well as the complication rate was compared between the 3 groups.

Results: Among the 3 groups of patients, the pneumothorax absorption rate pleural closed drainage group (13.44%/d) >Channel Tendon Therapy group (4.48%/d)>internal conservative therapy group (1.58%/d), but the closed chest drainage group had a higher postoperative complication rate: pleural effusion rate 42.42% and subcutaneous emphysema rate: 45.45%, while the Channel Tendon Therapy group had zero complications.

Conclusion: The treatment of pneumothorax by Channel Tendon Therapy has a high absorption rate, and its advantages, such as noninvasiveness and low complication rate, provide new ideas for the treatment of spontaneous pneumothorax.

Keywords: Channel tendon therapy; Spontaneous pneumothorax; Pneumothorax/therapy; Traditional chinese medicine

Introduction

Spontaneous pneumothorax is a disease in which the visceral pleura is ruptured and gas abnormalities are present in the pleural space in the absence of trauma or human factors, and is classified into primary and secondary based on the presence or absence of lung disease [1-2]. The curative effect of conservative treatment with western medicine is limited, invasive treatment and surgery may have complications in addition to causing pain in patients, and the curative effect of traditional Chinese medicine in treating a small amount of pneumothorax is still acceptable, but the curative effect of medium - large amount of pneumothorax is suboptimal. A noninvasive, effective treatment with a low complication rate is urgently needed. In this study, we compared the pneumothorax absorption rate and complication rate between the conventional conservative treatment, closed chest drainage as well as Channel Tendon Therapy treatment modalities in the three groups to clarify the effectiveness and clinical advantages of Channel Tendon Therapy.

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***Corresponding author:** Zheng Wen-bin, Department of Radiology, The Second Affiliated Hospital of Shantou University Medical College, 69 North, Shantou 515000, China

Materials and Methods

Patients

65 patients with spontaneous pneumothorax admitted to our hospital from September 2020 to February 2022 were included. Inclusion criteria: (1) Patients with a definite diagnosis of spontaneous pneumothorax [1-3]. (2) The patient's vital signs were stable. Exclusion criteria: (1) Those with open pneumothorax and tension pneumothorax; (2) Unable to cooperate with treatment; (3) Lung diseases such as bullae, which can cause secondary forms of pneumothorax, are confirmed to be present clinically or by imaging.

Treatment and efficacy outcome measures

Treatment by channel tendon therapy: For patients with stable vital signs and unwillingness to stay in bed for rest, conservative treatment by Channel Tendon Therapy (Wu Jinghua 's tendon hand therapy [4,5]) is used. Key points based on foot Taiyin, foot Taiyang, foot Yangming, foot Shaoyang, hand Taiyin, hand Jueyin, hand Saoyin to the seven meridians of the chest to find the lesions of the tendons, four limb reflex therapy was performed by using mill needles, litendon Tuina method, toe initiation from foot Sanyang, foot Taiyin, and from the beginning of the finger of the hand Sanyang meridian focus on the loose tendons, dial tendons reflex to the chest, repair the tendons, once daily for 40-50 min, treatment 1-3 courses: the first course of 7d, continuous treatment for 3d, rest for 4d (acupuncture plus manual loose tendons, extraction of tendons mainly); the second course of treatment for 7d, continuing treatment for 5d, resting for 2d (The main body of loose and extubated gluten); the third course of treatment for 7d, continuous treatment for 7d (Lixisu, therapeutic gluten based), during the treatment period does not limit the patient's daily activities.

Conservative treatment: For patients with mild clinical symptoms and stable vital signs, the patients were admitted to hospital for conservative treatment: mainly include strict bed rest, low flow oxygen absorption, anti infection and other conventional noninvasive treatment.

Closed chest drainage: For patients with symptoms such as dyspnea, hypooxygenation, cyanosis, and tachycardia, closed chest drainage is used.

The daily average absorption rate of pneumothorax as well as the incidence of complications (including pleural effusion as well as subcutaneous emphysema) in the above three groups were recorded.

Statistical analysis

The data were statistically analyzed using SPSS 19.0 software. The Mann - Whitney U test was used to compare the mean daily absorption rate of pneumothoraces in the group treated by Channel Tendon Therapy with that of the remaining two groups, respectively. Fisher's exact test was used to compare complication rates between the Channel Tendon Therapy treated group and the remaining two groups, respectively. Statistical differences were considered to be present when $p < 0.05$.

Result

11 patients were treated with Channel Tendon Therapy: 4 males and 7 females, aged 33-64 years, mean age 49 years; review interval 3-12d, mean review interval 7.56d; there was no complication of pleural effusion or subcutaneous emphysema in the affected side, with a mean lung compression of 5-65%, a mean lung compression of 41.67% and a mean daily absorption rate of 4.48%/d (Figure 1).

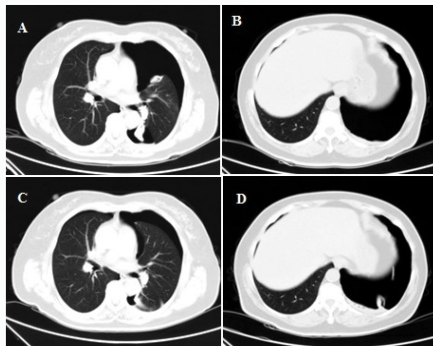


Figure 1: Axial chest CT at first diagnosis in A and B, with approximately 65% compression of the left lung. (C,D), the axial position of chest CT was reviewed after 7d, and the compression degree of the left lung was about 30%.

21 patients were treated conservatively: 19 males and 2 females, aged 15-77 years, mean age 44.14 years; the interval between recurrences ranged from 1 to 130d, with a mean interval between recurrences of 26.52d; there were 5-60% affected side lung compressions, 23% mean lung compressions, and 1.58% mean daily absorption rate, 5 of whom developed pleural effusions, with a pleural effusion incidence of 23.81%, and no patients had concurrent subcutaneous emphysema. Another 6 patients showed ineffective conservative treatment and more free gas in the thorax than before, which occurred in about 28.57% (Figure 2).

33 patients underwent closed chest drainage: there were 28 males and 5 females, aged 3-77 years, mean age 41. 94 years; review interval

1-54d, mean review interval 8.64d; the affected side showed a lung compression degree of 15-95%, a mean lung compression degree of 62%, and a mean daily absorption rate of 13.44%/d, of which 14 developed pleural effusion, a pleural effusion rate of 42.42%, and 15 developed subcutaneous emphysema, a subcutaneous emphysema rate of 45.45% (Figure 3).



Figure 2: Axial chest CT at first diagnosis in A and B, with approximately 40% compression of the left lung. (C,D), The axial position of chest CT was reviewed after 6d, and the compression degree of the left lung was about 55%.

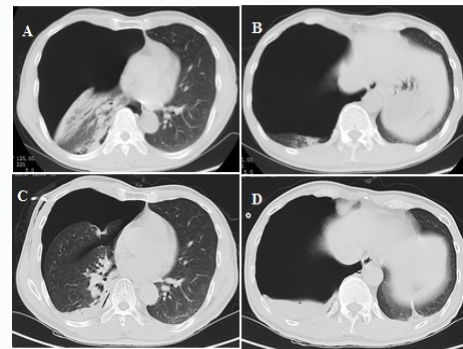


Figure 3: Axial chest CT at first diagnosis in A and B, with approximately 75% compression of the right lung. (C, D), To review the chest CT axial position after closed chest drainage for 3d, the compression degree of the right lung was about 40%, a small amount of effusion in the right pleural cavity, the right chest wall subcutaneous emphysema.

The Channel Tendon Therapy treated group had a higher mean daily absorption rate compared to the conservative treated group, except that, although not statistically different, the conservative treated group had a higher incidence of pleural effusion (Table 1). Although the rate of pneumothorax resorption was lower in the group treated with Channel Tendon Therapy compared with the group treated with closed chest drainage, the complication rate was significantly reduced (Table 1).

Discussion

This name of pneumothorax was not present in historical Chinese medical books, but it was included in the categories "" chest paralysis "", "" cough "", "" wheezing "", and "" lung distension "" in the Chinese medicine community on the basis of symptoms such as chest tightness, chest pain, and cough at the onset of pneumothorax. Chinese Swedish books have much been documented, such as "" the bloating person, full-blown and wheezing cough "" (Lingshu distension theory), "" the swelling and coughing of the lung, or left or right, but not sleep ""; "" those who have buccal and are not allowed to sleep but have

Table 1: Comparison of the absorption rate and complication rate of pneumothoraces between the Channel Tendon Therapy group and the conservative therapy group, and between the Channel Tendon Therapy group and the closed chest drainage group

	Channel Tendon Therapy group/ conservative therapy group	p	Channel Tendon Therapy group/ closed chest drainage group	p
Daily average rate of pneumothorax	4.48%/d>1.58%/d	0	4.48%/d<13.44%/d	0.01
Incidence of pleural effusion	0%<23.81%	0.29	0%<42.42%	0.02
incidence of subcutaneous emphysema	0%	-	0%<45.45%	0.02

distension and are refractory (Danxi heart method • cough) ""', ""' diseases of chest paresis, wheezing and coughing, chest back pain and shortness of breath (Synopsis of the Golden Chamber) ""' [6,7].

According to the diagnostic and treatment statement for pneumothorax issued by the European Respiratory Society in 2015: in addition to tension pneumothorax, the clinical treatment plan is decided based on the clinical symptoms of the patient [1], so conservative treatment may be used for those with mild clinical symptoms or stable vital signs, but conventional conservative treatment methods, free gas from the thorax is absorbed at a rate of 1.25% - 2.2% per day and slow absorption [8-11], while more efficient thoracic drainage as invasive procedures, while increasing patient pain, it may cause complications such as subcutaneous emphysema [12], and it increases the incidence of pleural adhesions [13] and has a higher recurrence rate compared to conservative management [14]. Pleurodesis, compared with chest drainage alone, has a reduced recurrence rate, but it can cause fever, pain and pleural effusion due to its induced pleurisy and other side effects [15]. Thoracotomy and thoracoscopic surgery are used to resect the primary lesion, although they have a lower rate of spontaneous pneumothorax recurrence while rapidly and effectively curing the patient, but the same complications such as air leakage, incision infection, atelectasis may exist [16] and are costly. In this context, in 2019 expert consensus on the diagnosis and treatment of pneumothorax Traditional Chinese Medicine (TCM) proposed the use of TCM divided evidence based treatment supplemented by western medicine treatment [17], but ""' every medicine has its side effect ""', which has the potential of causing liver injury [18] and kidney injury [19,20] cannot be overstated and thus should be used with caution.

Traditional Chinese Medicine (TCM) holds the view that the twelve meridians are concomitant and oriented with the twelve meridians, and the path of meridians basically follows the extension of nerve fibers, blood vessels, and lymphatic vessels, whereas the meridians connect these three tubular tissues and become the carrier of body fluid. Channel Tendon Therapy uses comprehensive mechanical stimulation and defocusing (guided on a seesaw and needling therapy) techniques to treat the patient's nodes, which affect the active state of nerve fibers, blood vessels and lymphatic vessels, three tubular carriers, and connective tissue to achieve therapeutic effects. In the body's twelve meridians flow route, foot Sanyang, foot Shaoyin, hand Sanyang and hand Sanyin are applied to the back of the chest, 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 [21].

In this study, 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, due to the fact that seven transabdominal cycles are closely related to thoracic structures, such as foot Taiyin, foot sun, foot Yangming, foot Shaoyang, hand Taiyin, hand Jueyin, hand Shaoyin, Wu Jinghua 's tendon hand therapy using guiding press forsything and acupuncture therapy through a dial tendon reflex to the chest, to achieve the effect of restoring the soft tissue function of the chest wall, improving the gas pressure gradient between the pleural cavity and tissues in patients with pneumothorax, promoting the absorption of nitrogen as well as the absorption of other gases and liquids in the thorax [2]. 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. The 11 patients with spontaneous pneumothorax included in this study, after being treated with 1-3 courses of Channel Tendon Therapy, had obvious absorption of free gas in the thorax, which could reach up to 4.48% in the absence of oxygen absorption and the patients maintained free movement, approximately 3 times the absorption rate of pneumothorax in the same period of conservative treatment, and had a significantly lower probability of developing pleural effusion and subcutaneous emphysema than patients with closed chest drainage during the same period of time, It can be seen that Channel Tendon Therapy is effective in the treatment of pneumothorax, with a low complication rate. It's noninvasive nature, low complication rate, and free movement in patients during nontreatment time are more acceptable to patients.

Conclusion

In the conservative treatment of spontaneous pneumothorax, Channel Tendon Therapy has great potential to promote gas absorption in the pleural space, expedite pleural repair and provide a non-invasive, effective and low complication rate treatment for patients who should not be or reject invasive treatment, and to some extent improve the quality of life during the patient's illness.

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