

Deep regional hyperthermia combined with Traditional Chinese Medicine in treating benign diseases in Clifford Hospital

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Abstract

Objective: To analyze the effect of Deep Regional Hyperthermia in combination with Traditional Chinese Medicine (TCM) in treating benign diseases in Clifford Hospital.

Methods: We had 143 cases with chronic pelvic inflammatory disease, 36 cases with chronic prostatitis, 21 cases with prostatic hyperplasia, and 35 cases with chronic bronchitis, and we performed the treatments as planned. The following treatments were given: Radiofrequency (RF) hyperthermia, TCM, Acupuncture, Antibiotic therapy.

Results: Effective rate in treating chronic pelvic inflammatory disease reaches 95%, which is significantly higher than with patients using TCM only. Effective rate in treating chronic prostatitis reaches 100%. Combining hyperthermia with TCM and Western Medicine is more effective than using Western Medicine only. Among the 21 cases of prostatic hyperplasia, there was significant improvement after two courses of treatments. Symptoms were relieved for the 35 chronic bronchitis patients and the patients' physical showed significant improvements after they received deep regional hyperthermia and TCM. Conclusions: Deep Hyperthermia Combined with Traditional Chinese Medicine in Treating Benign Diseases is safe and effective, painless and convenient with minimal side effect and has broad application range. Keywords: Deep Regional Hyperthermia, TCM, Benign Diseases

Apart from treating cancer, deep hyperthermia could also be used for treating non-neoplastic diseases, and the treatment proved to be effective. In combination with TCM in treating various benign diseases such as chronic pelvic inflammatory disease, chronic prostatitis, benign prostatic hyperplasia and chronic bronchitis, RF hyperthermia has led to satisfactory results. The followings are the statistical reports.

1. Chronic Pelvic Inflammatory Disease

Chronic Pelvic Inflammatory Disease is a type of common disease, usually caused by acute inflammation. It could lead to infertility, tubal (ectopic) pregnancy, chronic lower abdominal pain, thus affecting women's daily life and reproductive health. At Clifford Hospital, deep regional hyperthermia in combination with TCM was applied in treating chronic pelvic inflammatory disease. It has been demonstrated that the results are satisfactory. The followings are the statistical reports.

1.1. Materials and Methods

- 1.1.1. General information 283 patients with chronic pelvic inflammation who were diagnosed at Clifford Hospital from January 2010 to December 2012 and who had no RF hyperthermia contraindications were recruited. They were divided into 2 groups randomly. 14 subjects, aged 24-43, average age was 33±8, duration of the disease was 6-8 months, of which 47 patients suffered from infertility, 52 from menstrual disorder, 96 from thickened adnexa and tenderness, 23 from pelvic effusion, were in treatment group given RF hyperthermia, TCM and acupuncture. Meanwhile, 140 candidates, aged 23-45, average age was 32±7, duration of the disease was 4-8 months, of which 43 complained about infertility, 50 from menstrual disorder, 82 from thickened adnexa and tenderness, 52 from pelvic effusion, were in the control group who was given TCM and acupuncture. The two groups do not have statistical significance regarding the age, duration of disease or stage of the disease (P>0.05). TCM diagnosis: ① 36 cases of stagnation of dampness and heat: lower abdominal pain, tenderness radiating to the lumbosacral roots, increased intensity of pain and tenderness when feeling tired or during the menstruation, excessive secretion of the leucorrhea, yellowish, thick and smelly, on-and-off low fever, chest distress, poor appetite and dry mouth, yellow urine, dry and hard stool, red tongue nature, yellowish fur, thready and slippery pulse; ② 72 cases of Qi stagnation and blood stasis: lower abdominal swelling and stabbing pain, increased intensity of the pain when feeling tired or during the menstruation; excessive secretion of the leucorrhea; menstruation disorder, atropurpureus with clots, reduced pain when the clots are expelled, premenstruation depression, breast swelling pain, dark tongue nature with ecchymosis and petechiae, whitish

coating on the tongue, slippery pulse; ③ 67 cases of dampness stagnancy due to spleen deficiency: lower abdominal dull pain, lassitude, tiredness; excessive secretion of the leucorrhea, whitish and thin; tongue with ecchymosis and petechiae, pale tongue; ④ 83 cases of Congealing cold-dampness: lower abdominal crumodinia that usually deteriorated during the menstruation whereas relieved when heated, excessive secretion of the leucorrhea, thin and whitish, lumbosacral root pain, tiredness, dark tongue, pale fur, thready and slippery pulse; ⑤ 25 cases of Kidney Yang deficiency: dull pain in a certain part of the lower abdominal which is relieved when heated, soreness of waist, weakness of the knees, pale or dark complexion, dizziness and tinnitus, thin and whitish leucorrhea, pale tongue, whitish coating on the tongue, deep and thin pulse.

1.1.2. Treatment method

1.1.2.1. Deep Hyperthermia: NRL-002 radiofrequency field thermo therapeutic machine was used. We used only the upper and the lower electrode plate: 15 by 20 cm, the voltage was set 140-160V. Hyperthermia was given once a day, 40 min each time, 10 times per course, 2 courses in total.

1.1.2.2. Chinese Dialectical Therapy There are 5 patterns and the according prescriptions are as follows: ① Modified Discharge-Checking Formula for stagnation of dampness and heat: objectives, to clear heat and promote diuresis, to promote blood circulation to remove blood stasis; prescription: root of common peony 15g, moutan bark 15g, the root of red-rooted salvia 15g, plantain seed 15g, rhizoma alismatis 15g, Cape jasmine 10g, herba patriniae 20g, honeysuckle flower 20g, rheum officinale 10g, fructus aurantii 12g; ② Modified Pelvitis Formula for Qi stagnation and blood stasis: objectives, to promote blood circulation to remove blood stasis and to regulate Qi to alleviate pain; prescriptions: angelica sinensis 12g, root of common peony 15g, moutan bark 12g, the root of red-rooted salvia 20g, nutgrass galingale rhizome 12g, elecampane 9g, fructus aurantii 12g, plantain seed 15g, field pennycress 15g, pubescent holly root 20g; ③ Modified Discharge-Ceasing Formula for dampness stagnancy due to spleen deficiency: objectives, to invigorate spleen to eliminate dampness and promote blood circulation to remove blood stasis; prescriptions: the root of red-rooted salvia 15g, root of common peony 12g, Angelica sinensis 12g, Poria cocos 12g, Codonopsis pilosula 15g, radix curcumae 15g, rhizoma cyperi 12g, plantain seed 15g, rhizoma atractylodis 10g, honey-fried licorice root 6g. ④ Modified Shaofu Zhuyu Decoction for congealing cold-dampness: objectives, to relieve dampness stagnancy, and to promote blood circulation to remove blood stasis; prescriptions: cassia twig 10g, fennel 6g, Angelica sinensis 15g, Ligusticum wallichii 10g, root of common peony 12g, the root of red-rooted salvia 15g, Poria cocos 20g, Rhizoma Atractylodis Macrocephalae 15g, the root of three-nerved spicebush 12g, corydalis tuber 12g. □ Modified Internal Nourishing Pill for kidney Yang deficiency: prescriptions: monkshood 9g, cinnamon 1.5g (baked), fructus psoraleae 15g, herba epimedii 12g, the seed of Chinese dodder 15g, Astragalus mongholicus 20g, Rhizoma Atractylodis Macrocephalae 15g, Poria cocos 20g, Angelica sinensis 15g, Mantis Egg-case 9g. TCM was decocted and orally taken once a day for 20 days.

1.1.2.3. Acupuncture: on the basis of the theory of meridian and collateral, various points such as the Zhongji (RN3), Zigong (EX-CA1), Sanyinjiao (SP6), Qihai (RN6), Shenshu (BL23), GuanYuan Yu (BL26) were selected as the acupuncture points. Acupuncture was done once a day for 20 days. This could treat the patients from the outside to the inside and help them with the blood flow in the pelvic, thus relieving their pain.

1.1.3. Evaluation of Effectiveness: Complete recovery: symptoms and signs disappeared with laboratory and radiological test results in normal ranges. Partial recovery: most symptoms and signs disappeared. Slight recovery: symptoms and signs were relieved in different degrees. No effect: the symptoms and the signs remained.

1.1.4. Statistical tool: The data was processed using SPSS13.0 software, χ^2 was applied for the enumeration data.

1.2. Results

1.2.1. All cases were treated according to the treatment plans.

1.2.2. Comparison between the two treatment groups is as the following:

group	complete recovery	partial recovery	slight recovery	no effect	effective rate (%)	χ^2	<i>P</i>
treatment	66	42	28	7	95.1	19.	<i>P</i> <0.01
control	42	34	36	28	80.0	75	

Table 1. Comparison of the two groups

* Comparison to control group, *P*<0.01

According to Table1, there is a statistical significance between the treatment group and the control group(*P*<0.01). Neither groups had any adverse reactions. 47 out of 143 subjects in treatment group were infertile and 36 of them conceived 3-6 months after the treatment, which accounted for 76.6%. Among the control group, 43 were sterile, of which 22 had a successful pregnancy 3 to 6 months after the treatments, meaning 51.2% of the controlled group were successfully treated. 23 cases of pelvic effusion in treatment group felt significant relief.

1.3. Discussion

Pelvic inflammation disease is a type of commonly seen gynecological diseases that is usually chronic in nature and frequently recurring. Conventional antibiotics do not work well for pelvic inflammation disease [1]. In particular, chronic pelvic inflammation disease, due to its long-term inflammation, could lead to fibrous hyperplasia and adhesions on these inflammatory organs, thus causing various symptoms and complications [2].

The cause of pelvic inflammation disease is quite complicated, which usually includes modified Discharge-Checking Formula for stagnation of dampness and heat, modified Pelvitis Formula for Qi stagnation and blood stasis, modified Shaofu Zhuyu Decoction for congealing cold-dampness, and modified Internal Nourishing Pill for kidney Yang deficiency. It often manifests itself with poor blood circulation, abdominal pain, leukorrheal disease, post-labor fever, dysmenorrhea and infertility. TCM in combination with acupuncture could treat both the cause of the disease and its the symptoms. It could be a beneficial treatment option for pelvic inflammation disease. Deep regional hyperthermia could reach the deep tissues, while promoting the blood circulation of the pelvic, improving the nutrition support and oxygen supply, boosting the metabolism and resolving the inflammation. Hyperthermia has an anti-inflammatory effect which can increase the absorption of exudates in pelvic cavity and retard the adhesion of inflammatory tissues[3]. Hyperthermia in combination with TCM can improve the effect in treating pelvic inflammatory disease and female infertility induced by inflammation. Deep regional hyperthermia is an effective method for treating pelvic inflammatory disease.

2. Chronic prostatitis

Chronic prostatitis is one of the most common urological diseases. It could cause secondary vegetative nerve dysfunction, sexual disturbance, male infertility etc. Due to limited knowledge of its mechanism, etiology and risk factors, there are few effective and safe treatments or therapies available to date. We adopted hyperthermia therapy along with western medicine and TCM, which has led to a promising outcome.

2.1. Materials and methods

2.1.1. General information from jan. 2010 to dec. 2011, a randomly selected 36 cases of diagnosed Chronic prostatitis patients formed the treatment group, aged between 23 to 42, on average 30±4 years old, illness course was between 6 months and 3 years, all demonstrated various degrees of pain or discomfort from low abdominal, inguinal and testis areas. The treatment group was given hyperthermia therapy in combination with Western medicine and TCM, while the randomly selected control group of 36 cases, aged from 25 to 40 years, on average 32±3 years, the illness course was from 5 months to 4 years, was given only Western medicine in the meantime. There are no significant differences in terms of age, course and symptoms between the two groups. (*P*>0.05) TCM diagnosis differentiations: ① 6 cases of Damp heat descending type: Demonstrated by frequent, urgent, painful urination. ② 11 cases of Qi and blood stagnancy type: Demonstrated by inguinal swelling pain, complaining about pain in testis, penis, lower abdominal and back areas; urination with signs of interruption, pain; purple color or dark

spots on tongue; pulse signs: tight or weak, rough; ③ 6 cases of Kidney insufficiency type: urine signs: cloudy white, interruption, more frequent. hyposexuality, sexual impotence, dizziness, tinnitus, soft, sour back and knee, insomnia, white tongue texture with few moss; slow, weak or fast pulse signs ④ 13 cases of Qi stagnation in liver type: lower abdominal pain, testis discomfort pain, depression, nervousness, insomnia, hyposexuality or sexual impotence.

2.1.2. Treating method

2.1.2.1. Deep hyperthermia treatment: apply EHY-2000 radio frequency hyperthermia machine with selection of diameter 20 cm electrode panel, switch of modulation, output 60-90W. The heat therapy lasted 4 weeks, 40 min per course, 3 times per week.

2.1.2.2. Chinese Dialectical Therapy: Chinese medicine diagnose differentiations: divided into four types with different medicines used. ① For Damp heat descend type: treatment methodology used is clear heat and expel dampness, Prescription: yam rhizome 15g, semen coicis 30g, rhizoma smilacis glabrae 30g, soapstone 30g, moutan bark 12g, rhizoma alismatis 12g, Tetrapanax papyriferus 12g, golden cypress 12g; ② For Qi and blood stagnancy type: treatment methodology is to propel Qi and relieve pain, to motivate stagnant blood, Prescriptions: fennel 6g, rhizoma zingiberis 6g, corydalis tuber 6g, myrrh 12g, Angelica sinensis 18g, Ligusticum wallichii 12g, cinnamon 6g, root of common peony 12g, pollen typhae 18g, trogopterus dung 12g; ③ For kidney insufficiency type, treatment methodology used to nourish kidney and benefit Qi, Prescription: pill of six ingredients with rehmannia, Radix rehmanniae 32g, Chinese yam 32g, dogwood 16g, rhizoma alismatis 12g, moutan bark 12g, Poria cocos 12g; ④ Qi stagnant in liver type: treatment methodology used to resolve liver drainage and dissolve sediments, Prescription: radix bupleuri, pericarpium citri reticulatae 6g, Ligusticum wallichii 5g, radix paeoniae alba 6g, honey-fried licorice root 2g, rhizoma cyperi 5g. Oral intake once daily for 4 consecutive weeks.

2.1.2.3. Western medicine: oral intake of quinolones, 0.2 g per time, twice a day, receptor inhibitor terazosin 2mg, once every night, for 4 consecutive weeks of the two medicines.

2.1.2.4. Efficacy evaluation

Symptoms: the indicators used are in accordance with the NIH-CPSI (for chronic prostatitis, prostatitis and CP) made by the American National Health Research Institute; EPS routine exams including white cell count[4], treatment efficacy evaluation standards are as follow: complete recovery: Symptom evaluation points are 90% less than the pre-treatment evaluation points. WBC count<10⁴/HP; partial recovery: Symptom evaluation points are 90% less than that of the pre-treatment. WBC count is 50-89% less than that of pre-treatment or WBC <15/HP; slight recovery: Symptom evaluation points are 30-50% less than that of pre-treatment. WBC count less than 25-49% that of pre-treatment; no effect: Symptom evaluation points are 30% less than that of pre-treatment. WBC count is less than 25% that of pre treatment.

2.1.2.5. Statistic analysis: SPSS 13.0 software was used, data was analyzed by χ^2 function.

2.2. Results

2.2.1. All cases have completed their treatment courses as planned.

2.2.2. Efficacy comparison between the control and treatment groups (Table 2)

group	complete recovery	partial recovery	slight recovery	no effect	effective rate (%)	χ^2	P
treatment	15	13	8	0	100*	17.32	P<0.01
control	6	10	7	13	63.9		

Table 2. Comparison between the two treatment groups (n=36)

* Comparison to control group, P<0.01

As table 2 shows, treatment group has statistic significance when in comparison with the control group (P<0.01).

- 2.2.3. Side effects: 8.3% of cases in treatment group experienced various minor gastrointestinal reactions such as gastric discomfort and nausea. 8.6% of cases in control group had the symptoms of gastric reaction. Both groups showed minor side effect that did not affect ongoing treatments.

2.3. Discussion

Chronic prostatitis is a syndrome caused by various factors. Current studies have revealed that it is related to infection of pathogen neurological secretion, immunology, psychiatric factors and nearby organs' pathological changes, physical and chemical factors, and to the reduction of Zinc reserve. A current and widely adopted treatment is the antibiotic treatment. The first line choice is quinolones which can infiltrate the prostate membrane, accompanied by highly selective α -receptor inhibitor to resolve bladder and rear urethra and smooth the muscle of prostate spasm to reduce urethra resistance, improve micturition, relieve symptom, but in general, treatment results are unsatisfactory, therefore, the current clinical strategy is to promote combined treatments. TCM believes that Chronic prostatitis is in its disease concept of cloudy lymph, cloudy sperm, cloudy white, which have complex pathology, recurrence, prolong course, weak Qi in kidney, and insufficient bladder Qi generation, damp heat drains down at lower body as its consequence. For these reason, variations of disease types are common, damp heat, stagnant blood and weak kidney are the key pathological factors [5]. Therefore, it is essential to differentiate the types of symptom signs and treat them accordingly. For example, to clear heat and drain damp, propel Qi and reconnect LUO, mobilize blood and melt stagnancy, nourish kidney and benefit Qi, liver drainage and dissolve sediments. These treatment methodologies can effectively reduce chronic prostatitis syndromes such as damp heat with stagnancy and weakness. Modulating body Qi as whole is one of the important key elements in combined treatments. Through electric negative field, deep hyperthermia can improve prostate tissue blood circulation, expedite the metabolism and relieve the inflammation and the edema of the tissue, thereby relieving the symptoms of chronic prostatitis. This study indicates that combined treatments through multi-channel, multi- mechanism, and multi-process helped to form and maintain effective drug concentration rate, meanwhile improving the body and gland immunity. Patients had quick, significant improvement over their discomforts in the lower abdominal and groin areas, which contributed to the enhanced effectiveness of using only western medicine. No adverse side effects were noted.

3. Prostatic hyperplasia

Prostatic hyperplasia is one of the common diseases for senior males, and the risk increases as they age. Along with aging, the compression on the urethra and bladder orifice will increase from the hyperplasia of the prostate, thus various complications such as frequent urination, urgent urination, difficult urination, more night urination, urinary system infection, bladder stone and hematuria may occur. Though various treatments have been available in the clinics, it is quite essential to find some treatments that could delay the progression of prostatic hyperplasia. This could play a significant role in enhancing elderly men's quality of life. At Clifford Hospital, deep regional hyperthermia was applied to 21 cases of prostatic hyperplasia. The following is the report:

3.1. Materials and methods

- 3.1.1. General information 21 patients with prostatic hyperplasia were treated by hyperthermia and TCM in Clifford Hospital from January 2010 to December 2012. They were aged from 59 to 78, average age was 68 ± 5 , duration of the disease was 3 to 12 years, and they were all experiencing symptoms of urination with difficulties such as frequent urination, urgent urination and nighttime urination as well. The test showed the residual urine volume was (PVR) > 50 ml. The results of their medical history, physical examination of the rectum and B ultrasound did not reveal any contraindications to hyperthermia. TCM diagnosis differentiation: ① 3 cases of Damp heat descent type: frequent, interruptive or even dripping urination. Yellow hot urine, urethra burning pain, lower abdominal swelling pain, thirsty and dry mouth or no desire for water; red tongue with yellow, sticky moss, pulse signs: stressed, fast, or slippery fast; ② 6 cases of Qi and blood stagnancy type: interruptive urine, narrowing or dripping urine line, or block of urethra, tapping pain on lower abdominal areas, dark purple color tongue or ecchymosis on tongue. Pulse signs, stressed or rough ③ 5 cases of Spleen and kidney deficiency: frequent and or retaining urine, weak micturition, narrowing or dripping

urine line. Worse conditions including night time enuresis, fatigue, shortness of breath, lack of words, poor appetite, pale complexion, or proctitis by Qi descent. Colorless tongue, whitish coating, Pulse signs: feeble weak; ④ 4 cases of Kidney yang deficiency type: frequent urination particularly at night time, feeble micturition, dripping or blocking urination, fatigue, lower limb temperature, pale facial skin, pale tongue, thin whitish coating, pulse signs slight and deep; ⑤ 3 cases of Kidney yin deficiency type: frequent and interruptive urination, retaining urine, hot and filthy oliguria, fatigue, tinnitus dizziness, feeble on waist and knee thirstiness and sore throat, red tongue with less coating or thin, yellow coating, pulse signs slight and fast.

3.1.2. Treating method

3.1.2.1. Deep hyperthermia EHY-2000 RF hyperthermia device: electrode plate diameter – 20 cm, modulation switched off, output 60-90W, hyperthermia once a day, 40 min per time, 4 week duration.

3.1.2.2. Chinese dialectical therapy: ① Modified Bazheng Powder for damp-heat invasion of lower energizer: to clear the heat and promote diuresis, prescriptions: plantain seed 12g, dianthus superbus 12g, Polygonum aviculare 12g, soapstone 12g, Cape jasmine 12g, honey-fried licorice root 10g, akebiaquinata 12g, rheum officinale 12g; ② Modified Chenxiang Powder for Qi stagnation and blood stasis: to promote Qi circulation and activate blood flow, to achieve diuresis, prescriptions: tanshi 15g, pyrrosia lingua 15g, soapstone 15g, the seed of cowherb 15g, Angelica sinensis 15g, coastal glehnia root 20g, radix paeoniae alba 20g, liquorice 10g, orange peel 10g; ③ Modified Buzhong Yiqi Decoction for Qi deficiency of spleen and kidney: to tonify the spleen and warm to kidney, to promote the circulation of the Qi, to achieve diuresis, prescriptions: Astragalus mongholicus 15g, ginseng 15g, Rhizoma Atractylodis Macrocephalae 10g, honey-fried licorice root 15g, Angelica sinensis 10g, pericarpium citri reticulatae 6g, rattletop 6g, radix bupleuri 12g, ginger 9 pieces, 6 Chinese dates; ④ Modified Jisheng Shenqi Pills for kidney-yang exhaustion: to warm and invigorate the kidney Yang, to promote the circulation of Qi, prescriptions: prepared rehmannia root 20g, Chinese yam 10g, dogwood 10g, rhizoma alismatis 8g, moutan bark 8g, Poria cocos 8g, cinnamon 6g, radix aconiti lateralis preparata 6g, the root of bidentate achyranthes 10g, semen plantaginis 10g; ⑤ Modified Zhibai Dihuang Pills for kidney-yin deficiency: to nourish the kidney Yin, to induce urination, prescriptions: prepared rehmannia root 20g, Rhizoma Dioscoreae 10g, dogwood 10g, rhizoma alismatis 8g, moutan bark 8g, Poria cocos 10g, rhizoma anemarrhenae 10g, golden cypress 10g. TCM was decocted and orally taken once a day for 20 days.

3.1.2.3. Western medicine: oral intake of Finasteride tablets, 5mg once a day, orally.

3.2. Results

Among 21 cases, 8 cases were given an indwelling catheter due to urination difficulty, 1 case with catheter removed 4 days after hyperthermia started, 4 cases 6 days after hyperthermia started, 3 cases 7 days after hyperthermia started. 13 cases with the symptoms of urgent, frequent and night time urination showed improvements 2-4 days after the hyperthermia started, and after 2 cycles of hyperthermia, their symptoms were almost resolved and no complications were noted.

3.3. Results

In addition to Western medicines and TCM in the treatment of prostate hyperplasia, it is also documented that hyperthermia in combination with Western and Chinese medicine could also be applied [6]. Chronic inflammatory cell infiltration is commonly found in prostatic hyperplasia [7], [8], [9]. Inflammation may have played a major role in causing or aggravating prostate hyperplasia, whereas prostatic hyperplasia may have worked the other way around, namely, causing or aggravating prostatitis. Chronic inflammation and hyperplasia of prostate are mutually induced.

Hyperthermia could promote the elimination of local inflammation and the diminishing of prostate volume; symptoms of patients are therefore improved. Hyperthermia could not only relax detrusor urinae muscle and urethral sphincter, but also relieve spasm. This study shows that hyperthermia in combination with Western medicine and TCM could alleviate the symptoms related to prostatic hyperplasia. In 8 cases the patients who were given an indwelling catheter due to urination difficulty had their catheters removed 4-7 days after the hyperthermia started, much sooner than the conventional time which is 7-14 days. Those

with more serious symptoms, they showed improvements for their symptom 2-4 days after hyperthermia started, and they did not complain about any obvious discomfort. Therefore, deep regional hyperthermia could be one of the combined treatments for the patients who suffer from prostate hyperplasia. However, it is still not clear if regular hyperthermia for senior males could delay the progression of prostate hyperplasia. Further studies are required.

4. *Chronic bronchitis*

Chronic bronchitis is a type of commonly seen disease in clinical medicine, characterized by cough, expectoration, shortness of breath and frequent recurrence. The disease usually progresses slowly accompanied by obstructive pulmonary diseases, which could lead to pulmonary artery pressure, pulmonary heart disease, and pulmonary encephalopathy. Antibiotics remain the primary treatment. However, long-term use of the antibiotics could lead to resistance, which in turn would affect the effectiveness. In Clifford Hospital, deep regional hyperthermia in combination with TCM and acupuncture were applied in treating chronic bronchitis, which resulted in a promising outcome. The details are as follows:

4.1. Materials and methods

4.1.1. General information among those who underwent hyperthermia in the Clifford Hyperthermia Centre from January 2010 to December 2012, 35 patients presented with a diagnosis of chronic bronchitis, 21 males, 14 females, aged from 27 to 72 with an average age of 48 ± 6 , course of disease was 4-15 years. No contradiction to hyperthermia was known. There was no control group.

TCM diagnosis: ① 3 cases of Wind-cold syndrome: persistent cough, hoarseness, throat itching, thin and whitish phlegm, blocked and runny noses, chill, fever, headache, whole-body general soreness, thin and whitish coating on the tongue, floating and tense pulse. ② 3 cases of Wind-heat syndrome: dry cough, ropy and yellowish phlegm, thirst and throat soreness, turbid nasal discharge, fever, headache, sweating, red tongue nature, thin and yellowish coating on the tongue, shallow and quick pulse. ③ 5 cases of Phlegm-heat syndrome: constant cough with excessive phlegm, ropy and yellowish phlegm, dry cough, fever, thirst, restlessness, small volume and yellowish urine, dry and hard stool, yellowish and greasy coating on the tongue, wiry, rolling, rapid pulse. ④ 7 cases of phlegm-dampness syndrome: persistent and heavy cough, excessive phlegm, thin and whitish, throat gurgling with sputum, chest distress, poor appetite, tiredness, sleepiness, red tongue nature, whitish coating on the tongue, slippery pulse. ⑤ 8 cases of Qi deficiency syndrome: lack of strength in expelling phlegm, thin and whitish, pale complexion, shortness of breath, sluggishness, low voice, chill, sweating, light and tender tongue nature with some indentations, thin and weak pulse. ⑥ 9 cases of Yin deficiency syndrome: dry cough without phlegm, or minimal sticky phlegm, blood phlegm, hard to be expelled out, thirst and dry mouth, itching throat, hoarseness, hot flashes in the afternoon, red tongue nature, less mosses, thready and rapid pulse.

4.1.2. Treating method

4.1.2.1. Deep hyperthermia EHY-2000 RF hyperthermia device, electrode plate: diameter – 30 cm, modulation switched off, power 130-150W, hyperthermia once a day, 40 min per time and 10 times per course, 2 courses totally.

4.1.2.2. Chinese Dialectical Therapy: ① Modified Mahuang Decoction for wind-cold syndrome: to relieve the chill and cough; prescriptions: ephedra 9g, cassia twig 6g, almond 6g, honey-fried licorice root 3g; ② Modified Folium Mori and Chrysanthemum Decoction for wind-heat syndrome: to resolve fever and cough, prescriptions: folium mori 8g, chrysanthemum 3g, almond 6g, fructus forsythiae 5g, Mentha haplocalyx 3g, Platycodon grandiflorum 6g, liquorice 3g, Reed Rhizome 6g; ③ modified Qingjin Huatan Decoction for phlegm-heat syndrome: to remove heat from the lung, dissolve phlegm and resolve the cough, prescriptions: Scutellaria baicalensis 12g, jasmine 12g, rhizoma anemarrhenae 15g, trichosanthes kirilowii Maxim 15g, Fritillaria thun-bergli 9g, tuber of dwarf lilyturf 9g, tangerine 9g, Poria coco 9g, Platycodon grandiflorum 9g, liquorice 3g; ④ Sanao Erchen Decoction for phlegm-dampness syndrome: to relieve cough and reduce sputum, prescriptions: ephedra sinica Stapf 12g, almond 12g, liquorice 12g, Processed Rhizoma Pinelliae 15g, tangerine 15g, Poria cocos 9g, honey-fried licorice root 5g; ⑤ Modified

LiuJunzi Decoction for Qi deficiency syndrome: to strengthen the spleen and to supplement to lung, to invigorate the Qi and dissolve the phlegm, prescriptions: ginseng 12g, Rhizoma Atractylodis Macrocephalae 12g, Poria cocos 12g, honey-fried licorice root 9g, pericarpium citri reticulatae 6g, Processed Rhizoma Pinelliae 5g; ⑥ Modified Shashenmaidong Decoction for Yin deficiency syndrome: to nourish the Yin and Moisten the lung, and to relieve the residual heat; prescriptions: radix glehniae 12g, radix polygonati officinalis 10g, Radix Ophiopogonis 15g, radices trichosanthis 12g, hyacinth bean 10g, folium mori 5g, Licorice Roots Northwest Origin 3g. TCM was decocted and orally taken once a day for 20 days.

- 4.1.2.3. Acupuncture: Feishu, Lieque, Hegu, Dingchuan, Acupuncture was done once a day for 20 days.
- 4.1.2.4. Western Medicine. Antibiotics were determined by the bacterial culture and drug allergy results.
- 4.1.2.5. Treatment effect assessment the effect was evaluated according to the standards as listed in Practical Internal Medicine [10], TCM Criteria for Disease Diagnosis, and Proposed Criteria for Treatment Effect Assessment [11]. Cured: the symptoms including cough, phlegm and shortness of breath were controlled, the patients' conditions were stabilized, no reported recurrence; significant effectiveness: the patients' conditions were stable, the frequency of recurrence was reduced, the general conditions improved; effective: the conditions were still not stable, yet, the frequency of recurrence and the state of the disease were both relieved and the general conditions were improved; ineffective: no improvements for either the recurrence frequency, state of illness or general condition, or even deterioration.

4.2. Results

- 4.2.1. Clinical effect: 8 cases were cured, 11 with significant response, 9 with response, 7 failed to respond, to overall response rate was 80%.
- 4.2.2. Time for extinction of symptom: coughing was resolved in 4.5 ± 1.3 days, gasp 3.5 ± 0.5 days, whereas expectoration 4.5 ± 0.5 days. It was shorter than the time reported by other studies. After the treatments, the phlegm became much easier to be expelled out, and the lung rale was significantly reduced [12].
- 4.2.3. Improvements of the Symptom: After hyperthermia, it became much easier to expel out the phlegm, and the pulmonary moist rales were significantly reduced compared to that of before hyperthermia.

4.3. Discussion

It has been well-documented in literature that an integration of Traditional Chinese Medicine and Western Medicine could treat chronic bronchitis[13]. In this study, hyperthermia in combination with TCM and acupuncture was applied in treating chronic bronchitis. This is new clinical trial. Hyperthermia could boost pulmonary blood circulation and lymphatic return, alleviate edema, facilitate effusion absorption and accelerate clearance of inflammatory metabolic products and bacterial toxins. Hyperthermia increased the drug concentration in the focus, thus enhancing the therapeutic efficacy of the drugs, bettering the gasp and eliminating pulmonary rales significantly. Hyperthermia in combination with Western Medicine, TCM and acupuncture demonstrated a promising result in treating chronic bronchitis, pneumonia and other pulmonary diseases. The study also revealed that hyperthermia worked very well in relieving various chronic bronchitis symptoms, particularly in reducing the pulmonary rale. No adverse side effects were noted. A combination of hyperthermia, TCM and acupuncture could also be applied in treating other pulmonary diseases such as pneumonia. However, further clinical trials and studies are needed.

5. Conclusion

Modern technologies not only have made deep hyperthermia a reality, but also have promoted a more widespread application of it. Regional deep hyperthermia in combination with other conventional treatments such as TCM and natural therapy could be an alternative for benign diseases. It is safer, pain-free, more effective and convenient and has far less side effects.

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