

Pulse changes in patients with cervical spondylosis before and after acupuncture treatment

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Abstract

OBJECTIVE: To study changes in pulse diagram parameters (PDP) in patients with cervical spondylosis (CS) before and after acupuncture treatment, explore the characteristics of PDP and the relationship between PDP changes and therapeutic effectiveness, and provide evidence for outcome prediction and objective evaluation of CS treatment before and after acupuncture treatment.

METHODS: Patients with CS were treated with acupuncture and measured with a pulse acquisition

device based on image (PADBI) before the first and after the tenth acupuncture sessions. Changes in PDP from before until after the acupuncture sessions and patient impressions were analyzed to judge the effect of acupuncture treatment for.

RESULTS: The PDP values in effective patients were closer to normal values. This indicated that *Qi* stagnation and blood stasis of the patients was improved. The PDP changes from before to after the first acupuncture treatment were more obvious than those from before to after the tenth acupuncture treatment. This result indicates that the speed of symptom improvement decreased significantly after several acupuncture courses. Analysis of correlation between efficacy and PDP showed that the changes in PDP in five patients was abnormal, which mainly manifested as values of h1, u, p, Pp, and t1, and no significant changes or differences were increased with standard values. This indicated that the symptoms of CS were not improved in these patients.

CONCLUSION: PADBI can provide evidence for outcome prediction of acupuncture treatment in patients with CS. PADBI can provide evidence for objective evaluation of acupuncture treatment of CS.

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Key words: Spondylosis; Acupuncture; Pulse; Syndrome of blood stasis and *Qi* stagnation

INTRODUCTION

Feeling the pulse is one of the important diagnosing methods in Traditional Chinese Medicine (TCM) for

obtaining physiological and pathological information. It is difficult to identify pulse patterns accurately because pulse conditions contain a lot of information. The traditional method of feeling the pulse with the fingers is subjective and results can vary from person to person.

Cervical spondylosis (CS) is caused by degeneration and prolapse of the cervical intervertebral discs and cervical joints, which directly compress cervical spinal nerves, vertebral arteries and the spinal cord. The major clinical manifestations are pain along the neck and shoulder, upper extremity numbness, and radiating pain.¹⁻³ CS is similar to that of *Qi* stagnation and blood stasis in TCM. The etiology of CS is multifactorial and involves poor posture, anxiety, depression, neck strain, and sports or occupational activities.⁴ Conventional medical treatments for CS neck are limited by their modest effectiveness. TCM interventions have been widely used for the management of CS neck pain⁵⁻⁸ and acupuncture is one of the most popular. Many clinical studies have been conducted to evaluate the efficacy of acupuncture.⁹⁻¹¹ While, modern medicine has many diagnostic methods for CS, TCM diagnoses mainly rely on auscultation-olfaction, interrogation, and palpation, especially the pulse. Because of differences in understanding and clinical experience in traditional pulse-feeling, the objectification of pulse information is important.

To study the significance of pulse acquisition device based on image (PADBI) in the objective evaluation of acupuncture treatment for CS, we used TD-III-Type PADBI to measure PDP changes before and after acupuncture treatment in 50 patients with CS.

MATERIALS AND METHODS

Study population

This study included 50 patients suffering from CS being treated with acupuncture at the Chinese Medicine outpatient clinic, Affiliated Baokang Hospital of Tianjin University of TCM between October 2010 and March 2012. The group was composed of 38 women and 12 men, ranging from 18 to 78 years old, with an average age of 44.08. Of the 50 patients, 22 patients were under 40, 19 patients were 41-60 years old, and 9 patients were aged 61 years or older. All patients understood and agreed with the study items. The study design was approved by Medical Ethics Committee of Tianjin University of Traditional Chinese Medicine.

Inclusion criteria

Patients were included if they were men or women aged between 18 and 80, fit the diagnostic criterion established in the 2nd Symposium Meeting on CS,¹² and agreed to sign the informed consent and complete treatments on time.

Exclusion criteria

Patients with allergic constitution and needle syncope were excluded. Patients were excluded if they had a serious primary disease such as severe hypertension, cardiovascular and kidney diseases, hematopoietic system diseases, and other life-threatening diseases, or if they were suffering from mental disorders. Patients unwilling to participate in the study or were participating other medical trials were excluded.

Diagnostic criteria for CS

According to the 2nd Symposium Meeting on Cervical Spondylosis, the general diagnostic principle for CS is diagnosis by clinical manifestations and X-rays. If patients present with typical CS clinical manifestations, but X-ray does not reveal abnormalities and other diseases are excluded, then patients can still be diagnosed as having CS. Patients without clinical chief complaints and signs, but with abnormal X-rays should not be diagnosed with CS.

Treatment

Acupoints selected were: Jiaji (EX-B2); Dazhui (BU 14); Fengchi (GB 20); Xinshe (EX-HN 21); Baihui (BU 20); Sishencong (EX-HN 1); Quchi (LI 11); Shousanli (LI 10); and Hegu (LI 4). Sterile single-use acupuncture needles (40 mm in length and 0.30 mm in diameter; Hwato brand, Suzhou Medical Products Factory Co., Suzhou, China) were inserted into Jiaji (EX-B2) points to a depth of 20 to 30 mm at an angle of 75 degrees. The direction of needle insertion in Fengchi (GB 20) was orientated towards the contralateral canthus (to a depth of 25 to 30 mm). Points in the head were inserted into the skin to the subcutaneous tissue at an angle of 15 degrees to the point surface. Other points were perpendicularly inserted. The inserted needles were manually manipulated until the patient felt numbness or the acupuncture sensation known as "De *Qi*." Needles were retained in the points for 60 min. Sessions were administered once every other day with 10 sessions constituting one course.

Trial design

Fifty subjects with CS neck pain from outpatient clinics were recruited and treated with acupuncture. Then, their PDP was measured with PADBI before and after the first and the tenth acupuncture treatments. The assessment scale for cervical spondylosis (Table 1) used in the study was based on the score diagram of treatment on diseases of lumbar vertebrae,¹³ by the Japanese Orthopaedic Association in 1984. The table includes: clinical symptoms, clinical examination, and daily life activity. The highest total score is 23, and the test was scored according to ratings from the patients, with higher scores indicating greater severity. Differences in values were compared from before to after treatment. Using this scale, if the difference was from 23 to 14 then treatment was considered markedly effective, 13

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