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CLINICAL STUDY

Clinical effect of traditional Chinese spinal orthopedic manipulation in treatment of chondromalacia patellae

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Abstract

OBJECTIVE: To evaluate the clinical effect of traditional Chinese spinal orthopedic manipulation (TCSOM) in treating chondromalacia patellae (CP).

METHODS: Sixty cases of CP patients were randomly assigned to a TCSOM group and a Celecoxib group according to the random number table method. All patients in the TCSOM group were treated with a maximum of 10 spinal manipulations and rehabilitation training of quadriceps femoris. The symptoms before and after treatment were assessed with visual analog scale (VAS) and Kujala functional knee scoring system (KFKSS). A symptom improvement rate (SIR) was implemented in order to evaluate the effects of the treatments.

RESULTS: The symptoms of 16 patients in the TCSOM group quickly resolved after the first spinal manipulation and 8 cases were significantly improved. The VAS scores in the TCSOM group after 4 weeks of treatment were significantly lower than those in the Celecoxib group. The KFKSS scores in the TCSOM group after 4 weeks of treatment were significantly higher than those in the Celecoxib group. Side effects of the treatment were not reported. Symptom improvement rate based on the VAS in the TCSOM group indicated more significant improvements than the Celecoxib group.

CONCLUSION: TCSOM has greater efficacy than Celecoxib capsules for relief of the symptoms of CP.

Key words: Chondromalacia patellae; Manipulation, spinal; Orthopedics; Point EX B2 (Jiaji); Visual analog scale

INTRODUCTION

The chondromalacia patellae was named by Aleman in 1917.[1] Chondromalacia patellae (CP), defined as cartilaginous softening and fibrillation of patellar bone cartilage, is one of the possible causes of patellofemoral pain syndrome (PFPS).[2] CP is characterized by pain, edema and retro-patellar crepitation,[3] and is produced by repeated abnormal compressive action on the articular cartilage. This abnormal compression is derived from the non-congruence or the decrease of the patellofemoral joint (PFJ) contact area when a patellar subluxation or dislocation is caused by a poor anatomical or biomechanical relationship.[4] It is an important cause of anterior knee pain in adolescents and young adults, as well as in elderly patients, often predisposing its suffer-

ers to osteoarthritis of the knee joint.[5] Etiology of this disease remains unknown. The incidence of CP is estimated at 36.2% in China.[6] Conservative, first line therapy for chondromalacia patellae includes exercise, physical therapy, nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroid injections.[7] Traditional Chinese spinal orthopedic manipulation is also a type of physical therapy. Traditional Chinese Spinal Orthopedic Manipulation (Tcsom) Is A Traditional Chinese Medicine therapy in which CP is considered as the result of an "imbalance of *Yin* and *Yang*" in the spine or abnormal function of the nervous system. The TCSOM treatment is based on the theory of traditional Chinese medicine, human anatomy, biomechanics, and radiology.

MATERIALS AND METHODS

Subjects

Clinically, CP may be suspected by symptoms and signs including patellar crepitus, retropatellar pain, soft tissue swelling, tenderness, effusion, misalignment and limping. Pathological lesions of the patellar articular cartilage can be found with magnetic resonance imaging (MRI)[8] which has been shown to be sensitive and decisive in the vast majority of CP cases.[9,10] The 60 CP patients in this study were recruited from the outpatient department in Zhongda Hospital, between April 2013 and October 2014 and diagnosed by a physician by assessing the patient's symptoms, signs and performing a knee joint MRI examination.

This study was approved by The Medical Ethics Committees of the Southeast University. All patients signed their informed consent prior to their inclusion in the study. The patients were randomly assigned to TCSOM group treated with traditional Chinese spinal orthopedic manipulation (TCSOM) and Celecoxib group according to the random number table method. The TCSOM group (n = 30) included 9 men and 21 women, with ages ranging from 18 to 60 years, averaging (31 ± 8) years, and the course of disease ranging from 1 to 11 years. All the patients in the TCSOM group were treated with a maximum of 10 treatments, administered by a qualified doctor with over 10-year clinical experience of TCSOM. The Celecoxib group (n = 30) included 11 men and 19 women, with ages ranging from 19 to 58 years, averaging (30 ± 9) years, and the course of disease ranging from 1 to 12 years. There were no significant differences in age, sex, course of disease, pain severity, symptom scoring, signs and dependence between the two groups ($P > 0.05$).

Inclusion criteria

(a) Patients must fulfill the diagnostic criteria for CP through MRI examination. (b) Ages of patients must be between 18-60 years. (c) Duration of the pain must be greater than 3 months. (d) No other prior or concomitant therapy was used for the condition, without NSAID use, corticosteroid injection, other physical therapy, or other treatments specifically designed for chondromalacia. (e) Patients must comply with a completion of follow-up visits. (f) Patients must complete written and verbal questionnaires provided by the research administrator. (g) Patients have voluntarily signed an informed consent.

Exclusion criteria

The patients of pregnancy or breast-feeding, heart problems, allergies to sulfa drugs, current alcohol or drug abuse, knee replacement surgery, knee surgery, absence of knee pain, lumbar surgery, vertebral fracture, central herniation of lumbar inter-vertebral disc, post-operation of the spine, serious osteoporosis, vertebral tuberculosis, vertebral tumor or cancer, absence of interest in participating in the research study, were excluded.

Treatments

Celecoxib capsule is efficacious in the treatment of the signs and symptoms of osteoarthritis and rheumatoid arthritis at the proposed doses. The patients in the Celecoxib group were treated with Celecoxib capsules. and rehabilitation training of quadriceps femoris.

The patients of the Celecoxib group were treated with Celecoxib capsules (Pfizer Pharmaceuticals LLC, Caguas Puerto Rico), 200 mg once a day, for 4 weeks.

Rehabilitation training of the quadriceps femoris muscle: (a) isometric contraction of quadriceps femoris: the patient took a supine position, stretching the lower limb of the affected side, as forcefully as tolerable, so as to feel muscular tautness of thigh, for 15 seconds; (b) holding a ball with thigh: the patient took a seated position, holding a ball of 35 cm in diameter with thigh continuously as forcefully as possible, for 15 s. All the above-mentioned exercises were repeated 10 times as 1 set, 5 sets each time, and performed 3 times daily.

The patients in the TCSOM group were treated with traditional Chinese spinal orthopedic manipulations, for a maximum of 10 treatments. If the patient's symptoms resolved within 10 times of receiving the manipulations, no additional treatment was needed. Before treatment with the spinal manipulation, the following examinations were conducted.

(a) Palpation examination: this is one type of examination and diagnosis administered by way of following Traditional Chinese Medicine practices. The pads of the fingers are used to press along the spine in order to locate the spinous processes that are not in alignment. There is often tenderness reported while palpating the soft tissue and structures adjacent to these processes. Between L_1-L_3, on both sides of the spinous processes, there can be one or two taut soft tissue projections, which are perpendicular to the spine. These taut soft tissue projections are believed to be the cause of CP. (b) Lumbar imaging examination: X-ray imaging examina-