

Short-term Study of Bushen Jiangu Decoction Combined with PVP in the Treatment of Elderly Patients with Osteoporotic Thoracolumbar Vertebral Compression Fracture

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Abstract: To investigate the clinical effects of Bushen Jiangu Decoction combined with percutaneous vertebroplasty (PVP) in the treatment of elderly patients with osteoporotic thoracolumbar vertebral compression fracture (OVCF). Seventy-four elderly patients with OVCF were enrolled in our hospital and randomized by digital table method, 37 cases each. The control group received PVP treatment, and the observation group was treated with Bushen Jiangu Decoction on the basis of PVP treatment. Cobb angle, bone mineral density, Oswestry dysfunction index questionnaire (ODI) score, and visual analogue scale (VAS) were compared before and after treatment. After treatment, the Cobb angle of the observation group was smaller than that of the control group, and the bone density was higher than that of the control group ($P < 0.05$). The ODI score of the observation group was lower than that of the control group after treatment ($P < 0.05$); 1 month and 3 months after treatment, The VAS score of the 6-month observation group was lower than that of the control group ($P < 0.05$). Bushen Jiangu Decoction combined with Western medicine in the treatment of elderly patients with OVCF can restore Cobb angle, increase bone density, reduce postoperative pain and improve thoracic and lumbar spine function.

1. Introduction

Osteoporosis is a common disease in the elderly. As China gradually enters an aging society, the number of patients is gradually increasing. Osteoporosis vertebral compression fracture (OVCF) is one of the complications of osteoporosis. In elderly patients with osteoporosis, the bone strength is reduced, the fragility is increased, and the thoracolumbar spine can be fractured with mild force. Percutaneous vertebroplasty (PVP) is a minimally invasive procedure with minimal trauma, which can repair the mechanical structure of the thoracolumbar spine and relieve thoracolumbar pain. However, due to the low bone density of elderly patients with OVCF, it may affect the recovery of thoracolumbar function after operation. Osteoporosis belongs to the category of "bone sputum" and "bone contraction disease" in traditional Chinese medicine. The main bone of the kidney is myelin, and the spleen and kidney are weak, so it is impossible to make bone marrow and bone. Therefore, it should be treated with kidney and bone. The main ingredients of Bushen Zhuanggu Decoction are Pueraria, Chuanxuan, Yam, Epimedium, etc., which can nourish the kidney and strengthen the spleen and strengthen the bones. In this study, elderly patients with OVCF in our hospital were enrolled in this study. The effects of Bushen Jiangu Decoction combined with PVP on the function and pain of thoracolumbar spine were investigated.

2. Information and Methods

2.1 General Information

From April 2016 to December 2017, 74 patients with senile osteoporotic thoracolumbar vertebral compression fractures were enrolled in our hospital, and 37 patients were randomly divided into three groups. There were 15 males and 22 females in the observation group; the age ranged from 60

to 78 years old, with an average of (68.82±3.51) years; the onset time was 3 to 7 days, with an average of (5.11±0.39) days. There were 16 males and 21 females in the control group; the age ranged from 60 to 79 years old, with an average of (69.13±3.79) years; the onset time was 2-7 days, with an average of (4.87±0.036) days. The baseline data (sex, onset time, age) of the two groups were balanced ($P>0.05$). The study was approved by the Medical Ethics Committee of our hospital.

2.2 Inclusion Criteria

(1) Inclusion criteria: vertebral compression 35% to 70%; in line with the diagnostic criteria of "surgery" [1]; in line with the "diagnosis and efficacy criteria of TCM syndrome" liver and kidney deficiency syndrome [2]; X-ray, The CT examination confirmed the diagnosis; the patient signed the informed consent form. (2) Exclusion criteria: coagulopathy; asymptomatic vertebral compression fracture; incomplete vertebral posterior margin; spinal cord injury; intolerable to surgery; allergic to the drug used in this study.

2.3 Methods

The control group underwent PVP treatment. The C-arm machine was used to locate the injured vertebrae, 1% lidocaine local anesthesia, the needle was placed at an angle of 15° to the sagittal plane, and the needle was inserted into the 1/3 of the vertebral body. Expand the channel, place the expandable balloon, expand the balloon to the appropriate position, and place the working cannula, push the appropriate amount of bone cement to the posterior edge of the vertebral body, and after confirming that there is no leakage, rotate out of the working cannula to cover the sterile dressing. Antibiotics prevent infection after surgery.

The observation group was treated with Bushen Jiangu Decoction in PVP. Oral Yishen Bone Decoction was taken on the 2nd day after operation. The prescription: Pueraria 60 g, Chuan continued 30 g, Chinese yam 30 g, Epimedium 30 g, pangolin 30 g, astragalus 30 g, psoralen 30 g, antler cream 20 g, angelica 15 g, rehmannia 15 g, safflower 10 g. Decoction 2 times juice, morning and evening warm clothes, 1 dose / d, 4 weeks for a course of treatment, with 4 courses.

2.4 Observation Indicators

(1) Determination of Cobb angle before and after treatment. (2) The bone mineral density before and after treatment was measured by dual energy X-ray absorptiometry. (3) The Oswestry Dysfunction Index Questionnaire (ODI) was used to evaluate the thoracolumbar function before and after treatment [3], including sitting, walking, weight bearing, daily living ability, sleep status, etc., with a total score of 50, the higher the score, the dysfunction The more serious it is. (4) Visual analog scale (VAS) was used to evaluate the degree of pain before treatment, 1 month, 3 months, and 6 months after treatment. The total score was 10 points. The lower the score, the lighter the pain.

2.5 Statistical Analysis

SPSS 22.0 statistical software was used to analyze the data. The measurement data (Cobb angle, bone density, ODI score, VAS score) were expressed by ($\pm s$), t test, $P<0.05$ was considered statistically significant.

3. Results

There was no significant difference in Cobb angle and bone density between the two groups before and after treatment ($P>0.05$). After treatment, the Cobb angle of the observation group was smaller than that of the control group, and the bone density was higher than that of the control group ($P<0.05$). See Table 1.

ODI score Before treatment, the ODI score of the observation group was (37.36±4.15), and the ODI score of the control group was (37.61±4.29). There was no significant difference between the groups ($t=0.255$, $P=0.800$). The score was (22.83±3.36) points lower than the control group (27.15±3.78) points ($t=5.196$, $P=0.000$).

VAS scores There was no significant difference in VAS scores between the two groups before treatment ($P>0.05$). The VAS scores of the observation group at 1 month, 3 months, and 6 months after treatment were lower than those of the control group ($P<0.05$), as shown in Table 2.

Table 1 Comparison of Cobb angle and bone density before and after treatment in both groups ($\pm s$)

Group	Number of cases	Cobb Corner($^{\circ}$)		Bone density(g/cm^2)	
		Before treatment	After treatment	Before treatment	After treatment
Observation group	37	22.13 \pm 3.14	11.35 \pm 2.23	0.76 \pm 0.13	0.97 \pm 0.18
Control group	37	21.89 \pm 3.03	17.46 \pm 2.79	0.78 \pm 0.12	0.86 \pm 0.15
<i>t</i>		0.335	10.406	0.688	0.856
<i>P</i>		0.739	0.000	0.494	0.006

Table 2 Comparison of VAS scores between the two groups ($\pm s$, points)

Group	Number of cases	Before treatment	1 month after treatment	3 months after treatment	6 months after treatment
Observation group	37	8.47 \pm 0.61	6.39 \pm 0.37	4.41 \pm 0.39	2.25 \pm 0.13
Control group	37	8.63 \pm 0.68	7.25 \pm 0.54	6.01 \pm 0.48	3.08 \pm 0.22
<i>t</i>		1.065	7.991	15.736	19.757
<i>P</i>		0.290	0.000	0.000	0.000

4. Discussion

In elderly patients with osteoporosis, bone mineral loss is severe, bone mass is reduced, strength is reduced, and the patient's fall causes the spine to be affected by external force, and a compression fracture can occur. In elderly patients with OVCF, the Cobb angle of the spine is increased, the function of the thoracic and lumbar vertebral body is impaired, and the nerve endings are strongly painful, which affects the normal exercise and life of the patient.

By expanding the balloon, PVP can lift the endplate and promote the recovery of the injured vertebral body. In addition, by injecting bone cement, the surgery can enhance the stability and strength of the affected vertebra and avoid collapse. Studies have shown that bone cement generates heat through polymerization, destroying the nerve endings of the affected vertebrae, which can effectively alleviate pain [4]. However, the fracture may occur in the adjacent segment of the injured vertebrae after PVP. The reason is that the strength of the injured vertebral body is rapidly increased after the bone cement is injected, and the stress of the upper and lower vertebral bodies is also increased, while the strength of the upper and lower vertebral bodies is insufficient, thereby infecting the adjacent segments of the vertebral body. Prone to fractures. The study believes that elderly patients with OVCF need to use drugs to treat osteoporosis and enhance bone strength while performing surgical treatment [5].

Osteoporosis belongs to the category of "bone sputum" and "bone contraction" in Chinese medicine. It is closely related to kidney and spleen deficiency. Kidney gas is insufficient, bone marrow cannot be born, bone is dry; spleen and stomach are weak, can not be fine, and Qi is dying. Then the marrow is empty. Therefore, it is necessary to apply the method of tonifying the kidney and strengthening the spleen and strengthening the bones. In the case of Bushen Zhuanggu Decoction, Pueraria can relieve muscles and relieve heat. It is feasible to reduce blood swelling and continue to strengthen bones. Yam can be used to nourish kidney essence, Epimedium can nourish kidney and strengthen yang, pangolin can reduce swelling and vitality, and jaundice can be rehydrated. Swollen, psoralen can make kidney and help yang, antler cream can make up for yang, sputum can benefit spleen and stomach, angelica can and blood to relieve pain, rehmannia can be beneficial to fill the marrow, safflower can promote blood circulation. Modern pharmacological

studies have found that mucus polysaccharides in yam combined with inorganic salts can form bone; psoralen has a hormone-like effect, which can reduce osteoclast activity, accelerate bone growth and enhance bone structure mechanical properties [6-7] . The compatibility of various medicines, the treatment of both the symptoms and the symptoms, the effect of tonifying the kidney and strengthening the spleen, strengthening the muscles and strengthening the bones. The results of this study showed that the Cobb angle of the observation group was lower than that of the control group after treatment, and the bone density was higher than that of the control group ($P<0.05$), suggesting that Bushen Jiangu Decoction combined with PVP in the treatment of elderly patients with OVCF can restore Cobb angle and increase bone density. Gao Xiaotong et al [8] study showed that Bushen Jiangu Decoction combined with Western medicine in the treatment of elderly patients with OVCF, the Cobb angle, spinal canal encroachment rate is less than the treatment with Western medicine alone. The study showed that the ODI score of the observation group was lower than that of the control group after treatment, and the VAS score was lower than that of the control group ($P<0.05$), indicating that Bushen Jiangu Decoction combined with western medicine for elderly patients with OVCF can reduce postoperative pain and improve the thoracolumbar spine. Features.

In summary, Bushen Jiangu Decoction combined with Western medicine in the treatment of elderly patients with OVCF can restore Cobb angle, increase bone density, reduce postoperative pain and improve thoracic and lumbar spine function.

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