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Clinical efficacy of knee arthroscopy in the treatment of degenerative knee osteoarthritis.

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Abstract

Objective: This study aimed to investigate the clinical efficacy of knee arthroscopy in the treatment of degenerative knee osteoarthritis.

Methods: A total of 108 patients with degenerative knee arthritis admitted in our hospital from July 2015 to June 2017 were enrolled in this study. The patients were randomly divided into the control (n=54) and treatment groups (n=54). The patients in the control group underwent conventional drug therapy, whereas those in the treatment group underwent knee arthroscopy. The excellent and good rate, incidence of adverse reactions, satisfaction degree, recovery time, and hospitalization time of the patients in the two groups were observed and compared.

Results: The excellent and good rate of the patients in the treatment group was significantly higher than that of the patients in the control group (P<0.05). The incidence of adverse reactions of the patients in the control group was significantly higher than that of the patients in the treatment group (P<0.05). The two groups showed a significant difference in satisfaction degree (P<0.05). The hospitalization and recovery times of the patients in the treatment group were significantly shorter than those of the patients in the control group (P<0.05).

Conclusion: Knee arthroscopy presents a significant therapeutic effect on degenerative knee osteoarthritis. This strategy is characterized by a high safety and rapid recovery, and it is helpful in improving the patient satisfaction degree. Thus, knee arthroscopy has the potential to be extensively applied as an ideal therapeutic schedule.

Keywords: Degenerative knee osteoarthritis, Knee arthroscopy, Therapeutic effect.

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Introduction

Degenerative knee osteoarthritis is a common and frequently occurring disease. Relevant survey data indicated that the incidence of this disease has increased annually in recent years [1]. The impact of this disease on the physical and mental health and the on quality of life of patients have drawn considerable attention. Although degenerative osteoarthritis develops slowly, its ultimate result is the complete loss of the walking function of the knee as the disease progresses with prolonged disease course [2]. At present, various methods for treating degenerative osteoarthritis are available in clinical practice. However, most of them achieve a limited effect and present a high risk of complications. The development and application of knee arthroscopy in recent years provided a new treatment option for degenerative knee osteoarthritis [3]. A total of 108 cases of degenerative knee arthritis admitted in our hospital from July 2015 to June 2017 were selected as the study object. Then, the therapeutic effect of knee arthroscopy was analysed.

Materials and Methods

General information

A total of 108 patients with degenerative knee arthritis admitted in our hospital from July 2015 to June 2017 were enrolled in this study. All of the patients satisfied the clinical diagnostic criteria of degenerative knee osteoarthritis. The patients were randomly divided into the control (n=54) and treatment groups (n=54). The control group consisted of 34 males and 20 females aged 36-82 y old with an average of (54.3 ± 4.6 y). The duration lasted for 3 months-6 y, with an average of (2.4 ± 0.2 y). The treatment group consisted of 31 males and 23 females aged 37-81 y old with an average of (55.2 ± 4.7 y). The duration lasted for 4 months-7 y, with an average of (2.5 ± 0.3 y). The general data of the patients in the two groups were compared by using a statistical software, and no significant statistical difference was observed between the two groups (P>0.05).

Methods

The patients in the control group ingested diclofenac sodium dual release enteric-coated capsules (75 mg, qd). Depending on the patient's condition, the dosage was adjusted as necessary. One course lasted for 4 w. The corresponding drugs for protecting the gastric mucosa were administered during the treatment.

The patients in the treatment group underwent knee arthroscopy. The specific operation was performed as follows. The patient underwent epidural anesthesia, such that the lower limbs and the operating table edge were maintained vertical. Routine disinfection was performed, and the drapes were spread. A tourniquet was installed on the upper half of the thigh. Routine disinfection was performed, and the drapes were spread. The knee articular cavity was punctured by using the No. 10 needle. The synovial fluid was completely pumped and divided into two tubes. Exactly 80 ml of saline was injected into the articular cavity, which was then fully expanded. The stylet was slowly removed from the suprapatellar lateral or the medial bursa suprapatellaris-like epidural puncture. After the liquid was discharged from the needle hole, the stylet was connected to a washing device. The washing bottle was positioned. The medial or lateral knee joint was selected depending on the actual condition of the patient. A 0.3 cm skin incision was made using a sharp knife. The arthroscopy was placed in the articular cavity. A cold light source was started. Under a television monitoring system, the suprapatellar bursa, the patellar articular surface, the femoral intercondylar fossa, and the tibial joint space were photographed and archived. Biopsy was performed under the knee arthroscopy. The corresponding treatment was conducted based on the specific conditions of the patients. Possible treatments included thoroughly washing the articular cavity with physiological saline, grinding the spur, shaping the synovial membrane, and removing the episome. The knee joint incision was used to treat the patients with special conditions. Once the examination was completed, the articular cavity was washed thoroughly with saline. The residual liquid in the articular cavity was extruded, thereby completing all of the operation procedures. An elastic bandage was used for pressure dressing during the postoperative 24 h, followed by a cold compress up to 48 h. If the patient experienced obvious postoperative joint swelling, the hematocele and effusion in the articular cavity were extracted. Rehabilitation exercises of the quadriceps femoris and joint motion were performed during the postoperative 2 h.

Observation index and efficacy evaluation standard

The postoperative infection, meridians embolism, intraarticular hematoma, and other adverse reactions of the patients in the two groups were recorded. The hospitalization and recovery times of the patients in the two groups were recorded. The therapeutic effect on the patients was evaluated by using the HSS score. The main evaluation contents included stability, flexion deformity, myodynamia, range of motion, function, and pain. The score can be described as follows: 100: perfect; ≥ 85: excellent; 70-84: good; 60-69: general; and <60: poor. The excellent and good rate was obtained from the sum of the excellent rate and the good rate. The satisfaction degree of patients was evaluated based on a self-reported questionnaire that reflected three grades, namely, very satisfied, satisfied, and unsatisfied. The satisfaction degree was equal to the sum of the very satisfied rate and the satisfied rate.

Statistical methods

The relevant data were processed by using the statistical software SPSS22.0. The measurement data (hospitalization time and recovery time) were expressed as $\bar{x} \pm s$ and compared through t-test. The count data (total efficacy rate, satisfaction degree, and incidence of adverse reactions) were expressed as percentages (%) and compared through χ^2 test. $P<0.05$ indicated that the difference between the two groups was statistically significant.

Results

Clinical efficacies of patients in the two groups

The excellent and good rate of the patients in the control group was 81.5%. The excellent and good rate of patients in the treatment group was 98.1%. The difference between the two groups was statistically significant ($P<0.05$), as shown in Table 1.

Table 1. Clinical efficacies of patients in the two groups (n (%)).

Group	n	Excellent	Good	General	Poor	Excellent and good rate
Control	54	24 (44.4)	20 (37.0)	8 (14.8)	2 (3.7)	44 (81.5)
Treatment	54	28 (51.9)	25 (46.3)	1 (1.9)	0 (0.0)	53 (98.1)
χ^2						8.1987
P						0.0041

Incidence of adverse reactions of patients in the two groups

The incidences of adverse reactions of the patients in the two groups were compared. As shown in Table 2, the incidence in the treatment group was significantly lower than that in the control group ($P<0.05$).

Table 2. Incidences of adverse reactions of the patients in the two groups (n (%)).

Group	n	Intraarticular hematoma	Infection	Venous embolism	Adverse reaction
Control	54	4 (7.4)	4 (7.4)	2 (3.7)	10 (18.5)
Treatment	54	1 (1.9)	1 (1.9)	0 (0.0)	2 (3.7)
χ^2					6.0000

P	0.0143

Satisfaction degrees of patients in the two groups

As shown in Table 3, the satisfaction degree of the patients in the control group was significantly lower than that of the patients in the treatment group (P<0.05).

Table 3. Satisfaction degree of the patients in the two groups (n (%)).

Group	n	Very satisfied	Satisfied	Unsatisfied	Satisfaction degree
Control	54	28 (51.9)	19 (35.2)	7 (12.9)	47 (87.0)
Treatment	54	31 (57.4)	22 (40.7)	1 (1.9)	53 (98.1)
χ^2					4.8600
P					0.0274

Hospitalization and recovery times of patients in the two groups

As show in Table 4, the hospitalization and recovery times of the patients in the control group were significantly longer than those of the patients in the treatment group (P<0.05).

Table 4. Hospitalization and recovery times of the patients in the two groups ($\bar{x} \pm s$).

Group	n	Hospitalization time (d)	Recovery (month)
Control	54	16.3 ± 5.2	18.5 ± 3.0
Treatment	54	7.4 ± 1.8	12.4 ± 1.4
t		11.8852	13.5400
P		0.0000	0.0000

Discussion

Degenerative osteoarthritis is a type of arthritis caused by knee joint degenerative changes and chronic joint wear. This disease is also known as senile arthritis, hypertrophic arthritis, or hyperplastic arthritis [4]. Its main pathological manifestation is knee articular cartilage property change. The articular cartilage surface occurs in the reactive hyperplasia and spur. The pathogenesis of the disease is complex, including hypofunction, physiological factors, living, working environment, and trauma [5]. Cartilage degeneration is dominant at the onset of the disease, followed by changes in the bone substance and synovium. This disease is very common clinically. The incidence is higher among middle-aged and old people (20-60 y old). The mains symptoms include knee joint swelling, difficulty in walking up and down the stairs, and walking with difficulty and pain [6]. The severer causes permanent loss of walking function, which seriously affects the patient's health and quality of life.

Many methods are available for treating degenerative knee osteoarthritis. Among them, conventional methods such as drug therapy are not ideal and have a high incidence of complications [7]. Arthroscopy is a "minimally invasive" operation that can be used for the examination, diagnosis, and treatment of the joint, particularly the knee joint. This treatment induces slight pain, but it can reduce the incidence of infection, improve the safety of the surgical treatment, and accelerate the recovery of the body [8]. The medical advancements of knee joint technology in recent years have been widely used in clinical practice. Its surgical trauma is small, and it can shorten the postoperative recovery time and reduce the incidence of complications. The lesion tissues and inflammatory mediators in the joint can be completely removed, and the internal environment of the joint can be improved [9]. The treatment of arthroscopy can not only effectively relieve the pain of patients and control the disease development depth but also significantly improve the clinical efficiency and reduce the incidence of complications [10]. The results showed that the excellent and good rate of the patients in the treatment group was significantly higher than that in the control group (P<0.05), suggesting that knee arthroscopy was beneficial for improving the therapeutic effect and joint function of degenerative osteoarthritis. The incidence of adverse reactions of the patients in the control group was higher than that of the patients in the treatment group, and the satisfaction degree of the treatment group was lower than that in the treatment group (P<0.05), suggesting that knee arthroscopy was safe and effective, and that it could significantly improve the satisfaction degree of patients. The hospitalization and recovery times of the patients in the treatment group were shorter than those of the patients in the control group (P<0.05), suggesting that knee arthroscopy could significantly shorten the rehabilitation time of patients and promote their early return to normal life.

Conclusion

Knee arthroscopy presents a significant therapeutic effect in the treatment of degenerative knee osteoarthritis. It offers high safety, rapid recovery, and other advantages. Moreover, it is helpful in improving the patients' satisfaction degree, suggesting that it could be popularized and widely utilized as an ideal clinical treatment.

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