

Research Article

Treatment of Kashin-beck Disease with Chitosan

Leheng Feng, Jiarui Yang, Jiexin Wang, Sitong Meng, Haiyang Yu, Lingzi Han, Wei Zhong*

¹Department of Rheumatology and Immunology, The First Hospital of Qiqihar, Qiqihar 16295, Heilongjiang Province, China.

Abstract Objective To investigate the therapeutic effect of chitosan in the treatment of Kashin-beck Disease. Methods 58 cases of Kashin-beck Disease in our hospital from January 2023 to December 2023 were selected and randomly divided into the study group and the reference group, 29 cases in each group. The patients in the study group were treated by intravital injection of chitosan, and the patients in the reference group were given routine treatment. The VAS score of the two groups of patients before and after treatment were compared and analyzed. Results Before treatment, the two groups had no significant difference in VAS score was not statistically significant ($P > 0.05$); after the treatment, patients in the study group, VAS score was significantly better than the control group, comparison of the data between the two groups have obvious difference, the difference was statistically significant ($P < 0.05$). After the treatment, the effective rate of treatment of patients in the study group was 56 (98%), with reference to the patients in the treatment group the total effective rate was 27 (48%); the treatment of patients in the study group, the effective rate was significantly higher than that of the reference group of patients, data comparison between the two groups have obvious difference, the difference was statistically significant ($P < 0.05$). Conclusion The clinical effect of intraarticular injection of medical chitosan for Kashin-beck Disease is significant, which can effectively alleviate the symptoms of patients and help their physical function recovery.

Keywords: Medical chitosan; Kashin-beck Disease; Therapeutic effect

How to cite: Leheng Feng et al., Treatment of Kashin-beck Disease with Chitosan. J Med Discov (2024); 9(1): jmd24010; DOI:10.24262/jmd.9.1.24010; Received September 22nd, 2023, Revised November 30th, 2023, Accepted December 22nd, 2023, Published January 8th, 2024.

The knee joint, composed of the femur, tibia, and patella, is one of the largest joints in the human body [1]. It represents the joint with the highest incidence of disorders throughout the body, often presenting symptoms such as pain, giving way, and joint locking [2]. In this study, an investigation and analysis were conducted on patients with knee joint diseases who visited our hospital within the past year. The findings are reported as follows.

1 Materials and Methods

1.1 General Information

A total of 58 patients with knee joint diseases who visited our hospital from January 2023 to December 2023 were selected. They were grouped using a random number table method into a study group and a reference group, with 29

patients in each group. In the reference group, there were 15 males and 14 females, aged between 45 and 75 years, with an average age of 60.2 ± 8.7 years. In the study group, there were 16 males and 13 females, aged between 42 and 74 years, with an average age of 59.5 ± 9.3 years. Both groups of patients met the clinical diagnostic criteria for knee joint diseases. General information such as age, disease severity, and gender of the patients in both groups were compared. The intergroup data comparison showed no significant differences, with a statistical insignificance ($P > 0.05$).

1.2 Methods

Patients in the study group were treated with intra-articular injections of medical-grade chitosan. Medical-grade chitosan (Manufacturer: Shanghai Qisheng Bioproducts

*Correspondence: Wei Zhong, Department of Rheumatology and Immunology, The First Hospital of Qiqihar, Qiqihar 16295, Heilongjiang Province, China.

Co., Ltd., Approval Number: National Food and Drug Administration (NMPA) 2010 No. 3641160) was administered intra-articularly into the knee joint of the patients. The patients were placed in a supine position with a soft cushion under their knees, ensuring a 30-degree flexion. Standard disinfection procedures were followed, and the lateral aspect below the patella of the knee was disinfected with iodine solution. A 9-gauge needle was used for a swift subcutaneous puncture into the joint space. Throughout the puncture process, care was taken to avoid the needle touching bony tissues to prevent severe pain to the patient. After the needle was inserted into the joint space, it was pulled back slightly. If no yellowish synovial fluid was aspirated, 2 mL of medical-grade chitosan was injected. If increased resistance was encountered during injection, the needle tip was repositioned to a less resistant area. A bloodless and fluidless aspiration confirmed the appropriate needle tip placement for the chitosan injection into the knee joint. The doctor's movements during the procedure were deliberate to prevent injury to the soft tissues of the joint. After the injection was completed, the injection site was disinfected, and a sterile dressing was applied. Patients were assisted in flexing and extending their knees. It was ensured that the puncture site remained dry for 72 hours post-injection to prevent infection. Patients in the reference group received conventional treatment methods.

1.3 Observation Index

The clinical treatment outcomes of the two groups of patients were observed, and their VAS scores were compared and analyzed. If the scores of the study group were significantly better than those of the reference group,

it would demonstrate the superiority of the treatment method.

1.4 Statistical Analysis

Data were analyzed using SPSS 17.0 statistical software. Continuous data are presented as "mean \pm standard deviation (s)" and analyzed using the t-test. Categorical data are presented as percentages (%) and analyzed using the chi-square (χ^2) test. A significance level of $P < 0.05$ was considered statistically significant.

2 Results

2.1 Comparison of VAS Scores Before and After Treatment in Both Groups

Before treatment, there was no significant difference in VAS scores between the two groups of patients, with no statistical significance ($P > 0.05$). After treatment, the VAS scores of the study group were significantly better than those of the reference group. There was a notable difference in data comparison between the two groups, which was statistically significant ($P < 0.05$). Refer to Table 1.

Table 1: Comparison of VAS Scores Before and After Treatment in Both Groups ($\bar{x} \pm s$)

Group	n	pre-treatment	post-treatment
Research Group	29	8.99 \pm 0.56	0.71 \pm 0.22
Reference Group	29	8.91 \pm 0.62	1.21 \pm 0.32
t		0.9335	12.8756
p		>0.05	<0.05

2.2 Comparison of Treatment Efficacy Rates Between the Two Groups

After treatment, the treatment efficacy rate in the study group was 98 (98%), while the overall treatment efficacy rate in the reference group was 48 (48%). The treatment

efficacy rate in the study group was significantly higher than that in the reference group. There was a marked difference in data comparison between the two groups, which was statistically significant ($P < 0.05$). Refer to Table 2.

Table 2: Comparison of Treatment Efficacy Rates Between the Two Groups [n (%)]

Group	n	Number of visible people	Total effective rate
Research Group	29	56	56 (98%)
Reference Group	29	27	27 (48%)
χ^2			63.4196
p			<0.05

3 Discussion

Kashin-beck Disease can be caused by injuries to the cruciate ligaments, meniscus, patellofemoral joint abnormalities, or degenerative changes in the articular cartilage[3]. It primarily includes conditions such as osteoarthritis, synovitis, patellar softening, and meniscal injuries[4]. These conditions significantly impact a patient's physical health. With advancements in medical technology and the introduction of medical-grade chitosan, it offers effective relief for patients. According to the findings of this study, after treatment, the VAS scores of patients in the study group were significantly better than those in the reference group. There was a notable difference in data comparison between the two groups, which was statistically significant ($P < 0.05$). The treatment efficacy rate of 98% in the study group was significantly higher than the overall treatment efficacy rate of 48% in the reference group. The intergroup data comparison showed a significant difference, which was statistically significant ($P < 0.05$).

In conclusion, intra-articular injections of medical-grade chitosan for the treatment of knee osteoarthritis demonstrate significant clinical efficacy. It is worthy of further application and promotion.

Acknowledgments

This work was supported by Heilongjiang Provincial Health Commission scientific research project (No. 2022030329740)

Conflict of Interests

None

References

1. Cheng Wuzhong, Chen Ping, Yin Zuxin, et al. Clinical efficacy of massage technique combined with needle-knife therapy in the treatment of knee osteoarthritis[J]. *World Traditional Chinese Medicine*, 2023, 12(7): 1641-1644.
2. Yang Chunping, Wen Jianmin, Liang Chao, et al. Quality of life assessment in patients with knee osteoarthritis[J]. *Chinese Journal of Health Care and Medicine*, 2015, 17(3): 209-211.
3. Xia Zhihong, Shao Jiankang. Treatment of 120 cases of knee osteoarthritis with injection of medical-grade chitosan into the joint cavity combined with Hetongpi decoction fumigation[J]. *Chinese Health Nutrition*, 2023, 27(5): 385-386.
4. Zhang Yifeng, Xiao Jianchun, Lai Chunhui, et al. Current status of knee joint diseases in elderly permanent residents of Heyuan City[J]. *Journal of Chinese Gerontology*, 2015(2): 303-304.



This work is licensed under a Creative Commons Attribution 4.0 International License. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in the credit line; if the material is not included under the Creative Commons license, users will need to obtain permission from the license holder to reproduce the material.

To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>

