Effect of Vestibular Rehabilitation Training on Residual Dizziness in Patients with Benign Paroxysmal Positional Vertigo

Yue Liu, Peng Tang* Corresponding author: Peng Tang

The third department of Neurology, the Shaanxi Provincial People's Hospital, Xian 710068, China.

Abstract: Objective: To study the effect of vestibular rehabilitation training on residual dizziness in patients with benign paroxysmal positional vertigo (BPPV). Methods: 70 patients with residual dizziness diagnosed as BPPV in Shaanxi Provincial People's hospital were divided into observation group and control group. The observation group was treated with manual reduction + vestibular function rehabilitation training, and the control group was treated with manual reduction. There were 35 patients in the two groups. Within two weeks before and after training, the patients' vertigo Disability Rating Scale score (DHI), vestibular dysfunction rating scale score (vADL) and vestibular symptom index score (vADL) were effectively evaluated. Results: before training, there was no significant difference in DHI, vADL and vADL scores between the observation group and the control group ($P > 0.05$). After training, there was significant difference in DHI, vADL and vADL scores ($P < 0.05$). Conclusion: vestibular rehabilitation training can effectively change the residual dizziness symptoms of patients with BPPV, and the treatment effect is significantly higher than that of patients with simple manual reduction. The treatment of residual dizziness symptoms of patients with BPPV can greatly promote and apply vestibular rehabilitation training.

Keywords: Vestibular Rehabilitation Training; Benign Paroxysmal Positional Vertigo; Residual Dizziness; Treatment

Introduction

Benign paroxysmal positional vertigo (BPPV) is a benign symptom. Patients often have paroxysmal vertigo with significant positional characteristics, also known as BPPV, which means that after the head moves to a specific position, there will be transient dizziness. It is a restrictive and peripheral vestibular disease. Usually, the vertigo will be less than 1 minute. The duration of vertigo can be used as the basis for distinguishing vertigo diseases. There is a difference between primary and secondary diseases, and it is easy to relapse. Generally, it is a high incidence period after the age of 40, and the incidence rate will increase with the increase of age. The incidence rate of BPPV in vertigo diseases is relatively high, accounting for about 25% of the total number of patients. Doctors usually adopt manual reduction and drug treatment, and also adopt reduction instrument auxiliary treatment, surgical treatment, vestibular rehabilitation training and other treatment methods according to the specific conditions of patients. Patients often have BPPV symptoms in the process of body movement, changing posture and head movement. In China, traditional Chinese medicine has achieved remarkable results in treating BPPV symptoms. China has carried out the research and treatment of this case earlier than western countries.

1. Data and methods

1.1 general information

70 patients with BPPV diagnosed in Shaanxi Provincial People's hospital from May 2021 to February 2022 were treated for dizziness symptoms by manual reduction. These 70 patients should meet the following conditions: they fully meet the diagnostic criteria of bbpv, and were randomly divided into the observation group and the control group. The male to female ratio in the observation group was 9:26, the age was 29-71, and the average age was (46.21 ± 8.69) years old, The time of vertigo was 0.2-5 years, with an average of (2.21 ± 1.32) years. The ratio of male to female in the control group was 10:25. The average age was (45.45 ± 9.98) years old. The time of vertigo was 0.6-5 years, with an average of (2.23 ± 1.41) years. There was no significant

difference in the age, sex and time of onset of symptoms between the two groups, which was comparable.

1.2 Method

For both groups of patients, manual reduction was used. The observation group also used vestibular function training for intervention treatment, mainly including the following specific processes: first, the head training was carried out to let the patients open their eyes first and then close their eyes. The head was bent forward, tilted back and turned left and right. One group of sitting position and one group of lying position were selected respectively, and the operation of various movements should be carried out slowly; Then carry out visual training. The patient should ensure that the head is upright, place a sitting object in front of the line of sight, move the object, and the patient's eyes follow the object to move up, down, left and right. First, use the lying position, and slowly change to the sitting and standing position for training; Then carry out static and dynamic balance training, and compare the patient's eye opening and eye closing conditions respectively. The patient changes from sitting position training to standing position training, and carries out turning training after adaptation, including starting training, turning training, bending training, etc; Functional activity training is also required. Patients can walk in a straight line indoors, climb stairs, descend stairs, take steep slopes, take circular or S-shaped roads, and walk backwards. The walking distance should be slowly increased, from short to long, and the speed should be from slow to fast. It is best to carry out training twice a day for about 20 minutes each time, and persist in training for two weeks. These methods are designed by professional rehabilitation instructors. There will be special attending physicians and nurses to guide the patients. They can handle some emergencies in time. There are no adverse events during the training process.

1.3 Scale and observation index

After two weeks of law-abiding reduction treatment and vestibular function rehabilitation training, the two groups of patients were scored on their own scales, and the vertigo disability rating scale, vestibular dysfunction rating scale of daily activities and vestibular symptom index were recorded respectively. The higher the score, the greater the impact on the patient's life; Evaluate and compare the vestibular function of patients. The higher the score, the worse the vestibular function of patients will be; The symptom scores of the two groups were compared. The higher the score, the more serious the symptom.

1.4 Statistical analysis

Spss20.0 was used to analyze the data, and ($x \pm s$) was used to measure the data. The counting data was expressed in percentage, and the comparison between the two groups was $\chi 2$ test, $P < 0.05$ means the difference is statistically significant.

2. Results

The scores of the vertigo disability rating scale of the two groups before and after training were compared. The DHI scores of the two groups before training were consistent, and the difference was not statistically significant ($P > 0.05$). After vestibular rehabilitation training, the scores of the observation group (25.67 ± 2.45) were significantly lower than those of the control group (34.68 ± 4.56), and the difference was statistically significant ($P < 0.05$). Compared the vestibular dysfunction scale of daily activities between the two groups before and after training, there was no significant difference in the scores of the two groups before training ($P > 0.05$). After vestibular function rehabilitation training, the scores of the observation group (26.89 ± 4.91) were significantly lower than those of the control group (46.22 ± 4.21), the difference was statistically significant ($P < 0.05$). The symptom index scores of the two groups before and after training were compared. There was no significant difference between the two groups before training ($P > 0.05$). After vestibular function rehabilitation training, the score of the observation group (13.66 ± 3.21) was significantly lower than that of the control group (19.71 ± 2.54), and the difference was statistically significant ($P < 0.05$).

3. Discussion

After a large number of studies, relevant scholars found that the causes of BPPV residual symptoms include the following

First, the BPPV, due to the patient's own function, leads to the spatial orientation function; Secondly, there were small BPPV residues in the semicircular canal after reduction treatment; Third, the patients' psychological mood is relatively low, resulting in disorder. About 60% of the patients will have residual dizziness after BPPV reduction. For this situation, drug treatment is mainly used, but the cost is relatively high, and some side effects will occur. Some patients still do not get good symptom relief after drug treatment. Therefore, the method of BPPV reduction treatment needs to be continuously improved. Vestibular rehabilitation training has achieved good results in clinical medicine. At present, manual reduction is mainly used. However, after manual reduction, there are still many patients with dizziness and unstable walking. Traditional Chinese medicine has achieved good results in the treatment of this disease. After the diagnosis of dizziness, some of them have no clear cause, and some of them have not fully recovered after treatment with western medicine. Therefore, in order to effectively control this symptom, it is best to use the combination of traditional Chinese and Western medicine. Through this vestibular rehabilitation training for BPPV patients in our hospital, we mainly practiced the patients' head, eyes, dynamic, static and functional activities. After scientific treatment and training, the symptoms of BPPV precipitation were effectively reduced, and the effect of BPPV absorption was improved. It also has certain benefits for the vestibule, and the residual dizziness symptoms of patients were effectively improved. After vestibular rehabilitation training for these BPPV patients, it can effectively improve the effects of nerve reflex and eye movement reflex, realize the self-improvement and improvement of vestibular function, enable patients to gradually adapt to the uncoordinated function of their bilateral semicircular canals, and effectively improve the symptoms of dizziness.

Conclusion

After comparing the scores of the vertigo disability rating scale, the vestibular dysfunction rating scale of daily activities and the vestibular symptom index of the two groups, this article found that after the vestibular functional rehabilitation training, after data comparison, the scores of the patients in the observation group were lower than those in the control group, and the difference was statistically significant, It can significantly change the residual dizziness symptoms of BPPV patients and achieve a good recovery of vestibular function. This treatment is more conducive to the health of patients than relying solely on manual reduction. Therefore, vestibular training rehabilitation treatment is more suitable for extensive use in the treatment of BPPV patients.

References

[1] Lin, CJ, Xi, SX, Wang, J, [The effect of vestibular rehabilitation training on improving the symptoms of vestibular decompensation led by nurse]. Fudan Journal (Medical Edition) 2021 (01).

[2] Wu ZM, Ren LL, Zhang SZ. [Vestibular rehabilitation: its principle, steps and monitoring]. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. 2022 Mar 7; 57(3): 363-366. Chinese. doi: 10.3760/cma.j.cn115330-20210531-00316. PMID: 35325953.

[3] Li WY, Wu PX, Li HW. [Effects and influencing factors of vestibular rehabilitation in 171 cases]. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. 2022 Mar 7; 57(3): 263-269. Chinese. doi: 10.3760/cma.j.cn115330-20210601-00321. PMID: 35325936.

[4] Zheng GL, Zhang Q, Chen JY, Jin YL, Liu LF, Yang J. [The clinical application of mobile internet remote guidance platform for vestibular rehabilitation]. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. 2022 Mar 7;57(3):276-281. Chinese. doi: 10.3760/cma.j.cn115330-20210528-00302. PMID: 35325938.

[5] Wu PX, Li WY, Li HW. [Vestibular rehabilitation: present and future]. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. 2022 Mar 7;57(3):350-354. Chinese. doi: 10.3760/cma.j.cn115330-20210601-00322. PMID: 35325950.

[6] Qi, XY, Song, N, Gu, P, Yang, X. Research progress of vestibular rehabilitation mechanism and treatment [J]. Chinese general practice 2022 (11).