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Research Article

Clinical Study of Microvascular Decompression for the Treatment of Trigeminal Neuralgia

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Abstract: Objective: To explore the value of microvascular decompression in the treatment of trigeminal neuralgia. **Methods:** The clinical data of 80 patients with trigeminal neuralgia who admitted to our hospital from February 2015 to February 2019 were retrospectively analyzed. The patients were randomly divided into two groups. The control group received routine treatment, and the observation group underwent microvascular decompression. **Results:** The total effective rate of the observation group was higher than that of the control group, $P<0.05$. The recurrence rate of the observation group was lower than that of the control group, $P<0.05$. **Conclusion:** Microvascular decompression for the treatment of trigeminal neuralgia can significantly improve the efficacy and reduce the recurrence.

Keywords: *Trigeminal neuralgia, Microvascular decompression, Curative effect, Recurrence rate*

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1 Introduction

Trigeminal neuralgia is a common cranial neuropathy. It is severe and long-lasting, which poses a greater threat in patients' daily life. Therefore, improved treatments for patients with trigeminal neuralgia has a positive effect on the improvement of their life quality. In order to explore the effect of microvascular decompression in the treatment of trigeminal neuralgia, we have performed two different treatments for 80 patients from February 2015 to February 2019. We have found that the efficacy of microvascular decompression is significant. The report is as follows:

2 Information and methods

2.1 General information

In this paper, 80 patients with trigeminal neuralgia who admitted from February 2015 to February 2019 were enrolled in this study. They were randomly divided into two groups. In control group, there are 24 males and 16 females, aged 27–75 years, mean (54.96±4.32) years old, with a course of 9 months to 2 years, average (1.27±0.46) years. In the observation group, there are 23 males and 17 females, aged 26–77 years, mean (55.02±4.89) years old, with a course of 11 months to 2 years, average (1.31±0.53) years. There was no significant difference between these two groups in general data, $P>0.05$. All patients who participated in this study have signed informed consent on the premise of being informed of the need for surgical treatment and safety concerns.

2.2 Methods

The patient in the control group who received routine treatment was given with the phenytoin tablets (manufacturer: Tianjin Lisheng Pharmaceutical; National Pharmaceutical Standard: H12020120), carbamazepine tablets (manufacturer: Shanghai Fudan Fuhua Pharmaceutical; National Pharmaceutical Standard: H31021366). The dosage of phenytoin is 0.2 g/time, three times/day orally with continuous administration for ten days; the dosage of carbamazepine is 100mg orally for the first time, but the dosage is increased with 100 mg from second time onwards for two times/day with continued medication for ten days.

Meanwhile,the patient in the observation group who underwent microvascular decompression was given with the general anaesthesia before go for the surgical treatment. At first, the lateral position of the patient was maintain, and the upper body was raised about 15o with the mastoid as the highest point. A 3–4 cm long straight incision was taken at the hairline of the affected ear to open a 3cm x 2.5cm bone window. The bone window is the upper limit, while the sigmoid is the outer limit. The dura mater is radially cut, and then the cerebellar cerebral cistern was opened. The brain segment of the trigeminal nerve root bridge was revealed, and the pathologic blood vessel was found. Then, the arachnoid membrane at the upper side of the vascular nerve was separated. A suitable size of polyester sheet was placed between the blood vessel and the nerve at the lesion. Immediately, a cut off was performed by the bipolar coagulation, and the blood vessel was separated from the nerve. After the separation was confirmed to be good, the incision was sutured.

2.3 Observation index

1 The total effective rate of treatment;

2 Recurrence rate

2.4 Judging standard

The efficacy is evaluated based on the number of pain episodes and the degree of pain. Significant effective: there is little or no pain, the pain level is obviously reduced or completely disappeared; effective: the number of pain is reduced, and the degree of pain is relieved; not effective: there are no signs of improvement in the number of pain episodes and pain degree.

2.5 Statistical analysis

The data were analyzed by statistical software SPSS 22.0, and the count data were expressed by X^2 test and rate (%). If $P<0.05$, the data difference was statistically significant.

3 Results

3.1 Comparison of treatment efficacy

The total effective rate of the observation group was significantly higher than that of the control group, $P<0.05$. As shown in Table 1:

Table 1. Comparison of treatment effects [n(%)]

Groups	n	Not effective	Effective	Significant effective	Effective number
Observation group	40	2 (5.00)	18 (45.00)	20 (50.00)	38 (95.00)
Control group	40	8 (20.00)	16 (40.00)	16 (40.00)	32 (80.00)
X^2	-	-	-	-	4.114
P	-	-	-	-	< 0.05

3.2 Comparison of recurrence rates

The recurrence rate of the observation group was significantly lower than that of the control group, $P<0.05$. As shown in Table 2:

Table 2. Comparison of recurrence rate [n(%)]

Groups	n	No recurrence	Recurrence
Observation group	40	39 (97.50)	1 (2.50)
Control group	40	34 (85.00)	6 (15.00)
X^2	-	-	4.114
P	-	-	<0.05

4 Discussions

Trigeminal neuralgia refers to paroxysmal pain that occurs in the trigeminal region of the unilateral side. This disease can cause a strong pain in the patient during an acute attack. The patient did not have any warning before the onset of the disease, and the pain was obvious when the disease occurred. In some patients, pain could be triggered when chewing, talking, touching the face and facial flushing symptoms as well as tearing[1]. At present, the pathogenesis of this disease is still not understood, but most of the experts believe that trigeminal neuralgia is related to vascular compression in the trigeminal nerve region. The compression effect of blood vessels on the nerves is a serious pathological condition that causes axonal excitability and strong pain[2]. Such diseases are severe and have a poor prognosis, which causes the patients often prone to drastic emotional fluctuations which seriously threatens the life quality of patients. Therefore, an effective treatment is in needs of patients with trigeminal neuralgia.

At present, the clinical treatment methods for trigeminal neuralgia mainly include drug treatment and surgery. Microvascular decompression is often the preferred treatment method in surgical treatment. Although the treatment effect of microvascular decompression is significant, the related studies are still scarce. Based on this, 80 patients with trigeminal neuralgia were enrolled in our hospital for the treatment of microvascular decompression. Microvascular decompression is a surgical procedure based on microvascular compression theory to relieve nerve compression by completely decompressing the compressed nerve, thereby alleviating pain in the trigeminal nerve region and avoiding postoperative recurrence. At the same time, this operation can effectively preserve the physiological function of the trigeminal nerve[3]. Also, microvascular decompression has the advantages of small incision area of the bone window and small trauma. Not only the clinical effect is significant, but also the loss of the surgical area is small[4]. The study showed that the effective treatment rate of the observation group was significantly higher than that of the control group, indicating that microvascular decompression can significantly improve the efficacy. The recurrence rate of the observation group was significantly lower than that of the control group, indicating that microvascular decompression can reduce the recurrence rate. In summary, microvascular decompression in patients with trigeminal neuralgia not only can significantly improve the efficacy but also can reduce the recurrence. Thus, it is necessary to promote microvascular decompression in the treatment of trigeminal neuralgia.

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