Proceedings of Anticancer Research, 2022, Volume 6, Issue 2
http://ojs.bbwpublisher.com/index.php/PAR
ISSN Online: 2208-3553
ISSN Print: 2208-3545

Clinical Effect of Laser Treatment Combined with Compound Xueshuantong Capsule in the Treatment of Diabetic Retinopathy

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Abstract: *Objective:* To determine the clinical value of compound Xueshuantong capsule in the treatment of diabetic retinopathy on the basis of laser treatment. *Methods:* Data were collected from 98 patients with diabetic retinopathy from February 2021 to February 2022. They were divided into two groups by drawing lots. The experimental group was treated with compound Xueshuantong capsule and laser treatment, whereas the control group was treated with laser treatment alone. *Results:* The absorption of exudation, resolution of retinal edema, and absorption of bleeding took longer in the control group; the incidence of visual acuity recovery to more than 0.5 and the patients' blood glucose levels were better in the experimental group, $p < 0.05$. *Conclusion:* For patients with diabetic retinopathy, laser treatment combined with compound Xueshuantong capsule can effectively improve the visual function and rehabilitation efficiency of patients with diabetic retinopathy as well as stabilize their blood sugar levels. It has high clinical application value.

Keywords: Laser treatment; Compound Xueshuantong capsule; Diabetic retinopathy; Clinical effect

Online publication: March 22, 2022

1. Introduction

Diabetic retinopathy is a complication of diabetes mellitus, with high incidence, multiple complications, and low cure rate. It has been reported that most diabetic patients have abnormal blood glucose levels and are prone to peripheral nerve abnormalities, gastrointestinal dysfunction, and other symptoms. With unstable blood glucose levels, complications such as retinopathy, constipation, diabetic foot, and so on may occur. Patients with diabetic retinopathy often suffer from different degrees of visual impairment. At present, the clinical effect of retinal laser treatment is unsatisfactory, thus reducing the quality of life of patients. With the progress of traditional Chinese medicine, symptomatic intervention with drugs for promoting blood circulation and removing blood stasis can effectively improve patients' clinical symptoms and gradually restore their visual function. Ninety-eight patients with diabetic retinopathy treated in February 2021 to February 2022 were included in this study. The improvement of their symptoms, visual acuity, and blood sugar levels were observed after laser treatment combined with compound Xueshuantong capsule.

2. Data and methods

2.1. Clinical data

From February 2021 to February 2022, 98 elderly patients with diabetic retinopathy were selected as the

research subjects. The patients were divided into two groups by drawing lots, with 49 patients in each group. In the control group, there were 20 male patients and 29 female patients, age ranging from 57 to 73, with a mean age of 65.19 ± 1.22; in the experimental group, there were 18 female patients and 31 male patients, age ranging from 58 to 72, with a mean age of 65.24 ± 1.31. The baseline data of the patients were not statistically significant ($p > 0.05$).

Inclusion criteria: (1) approved by the Ethics Committee; (2) complete basic data; (3) normal organ function; (4) no cognitive abnormalities; (5) patients and their family members signed the informed consent form. Exclusion criteria: (1) hereditary mental disorder; (2) incomplete data; (3) mismatch with clinical diagnostic evaluation; (4) patients with coagulation dysfunction; (5) patients allergic to the experimental drug; (6) patients with poor compliance.

2.2. Methods

Prior to laser treatment, the symptoms of each patient should be evaluated, and the indications for the procedure should be determined. During laser treatment, the spot range and diameter should be adjusted, and the broadcast exposure time should be defined. The treatment should be carried out four times, once every two weeks.

For the experimental drug used in this study, compound Xueshuantong capsule (Guangdong Zhongsheng Pharmaceutical Co., Ltd.; National Drug Approval Number: Z20030017; Specification: 0.5g*60s), the patients were required to take the drug orally three times a day and three pills at a time for one week, as a course of treatment.

2.3. Observation indicators

(1) Clinical symptoms: absorption of exudation, resolution of retinal edema, and absorption of bleeding.
(2) Visual changes and blood glucose levels: fasting blood glucose, 2-hour postprandial blood glucose, and visual acuity.

2.4. Statistical analysis

The number of cases whose visual acuity improved to more than 0.5 were counted by %, and X^2 value was given. The bleeding absorption, exudation absorption, blood glucose levels, and the improvement of retinal edema were counted by ($\overline{x} \pm s$). SPSS 21.0 was used to analyze the data to obtain the chi square value, t value, and p value. $p < 0.05$ indicates statistically significant data.

3. Results

3.1. Symptom improvement

After evaluation, the time for exudation absorption, retinal edema resolution, and bleeding absorption in the control group was longer ($p < 0.05$) (**Table 1**).

Table 1. Comparative analysis of bleeding absorption time, exudation absorption time, and retinal edema resolution time between the two groups

Group	Number of cases	Bleeding absorption (weeks)	Exudation absorption (weeks)	Retinal edema resolution (weeks)
Control group	49	3.09 ± 0.83	9.89 ± 1.46	5.34 ± 0.62
Experimental group	49	1.64 ± 0.71	8.97 ± 1.28	4.07 ± 0.69
t		9.2927	3.3167	9.5835
p		0.0000	0.0013	0.0000

3.2. Blood glucose levels and visual function

The incidence of visual acuity recovery to more than 0.5 and the measured blood glucose levels were better in the experimental group ($p < 0.05$) (**Table 2**).

Table 2. Comparative analysis of the incidence of visual acuity recovery to more than 0.5, fasting blood glucose levels, and 2-hour postprandial blood glucose levels between the two groups

Group	Number of cases	Incidence of visual acuity recovery to more than 0.5	Fasting blood glucose (mmol/L)	Postprandial blood glucose (mmol/L)
Control group	49	30 (61.2%)	5.05 ± 0.57	10.28 ± 1.29
Experimental group	49	48 (98.0%)	4.56 ± 0.68	8.39 ± 1.16
X^2/t		20.3538	3.8656	7.6260
p		0.0000	0.0002	0.0000

4. Discussion

Diabetes is characterized by high incidence, various complications, and low cure rate. Complications such as neurological dysfunction and gastrointestinal dysfunction may occur without proper control. Diabetic retinopathy is a common complication in the progression of diabetes mellitus. The increase of blood glucose levels can lead to retinal anoxia and ischemia, thereby reducing the visual function of patients. In severe cases, blindness may occur, lowering the patients' quality of life and increasing their stress levels [1]. Laser treatment is often used in the treatment of this disease. The clinical effects vary depending on the degree and characteristics of the condition, particularly in cases of central vein obstruction, vascular rupture, and bleeding. In traditional Chinese medicine, diabetic retinopathy is under the category of "sudden blindness." In the treatment of this condition, it is important to pay attention to promoting blood circulation to remove blood stasis, dredging meridians, and dredging collaterals. Some scholars have suggested that diabetic retinopathy is caused by blood stasis and Qi deficiency. The prescription composition of compound Xueshuantong capsule includes Salvia miltiorrhiza, Panax notoginseng, Astragalus membranaceus, etc. As a traditional Chinese medicine preparation, it can help reduce swelling, replenish Qi, relieve pain, remove blood stasis, cease bleeding, dredge menstruation, improve blood circulation, prevent platelet accumulation, and reduce blood viscosity [2]. Among them, Panax notoginseng can help with blood circulation, pulse dredging, anti-aging, and pain relief. Astragalus membranaceus contains antiperspirant, detoxifying, surface-strengthening, and Qi-tonifying properties. Salvia miltiorrhiza helps relieve menstrual pain, promote blood circulation, remove blood stasis, lower blood temperature, and reduce swelling. According to the experimental data, the exudation absorption time, bleeding absorption time, and retinal edema improvement time in the control group were worse than those of the experimental group; in addition, the incidence of visual acuity recovery to more than 0.5 and the blood glucose levels of the control group were worse than those of the experimental group ($p < 0.05$). It can be seen that on the basis of laser treatment, the use of compound Xueshuantong capsule can effectively improve the effectiveness of rehabilitation, shorten the rehabilitation cycle, alleviate the symptoms of retinal edema, restore visual function, and stabilize blood glucose levels. Modern pharmacology points out that compound Xueshuantong capsule contains total saponins of Panax notoginseng, which can effectively improve blood viscosity, promote blood circulation, improve blood flow in the retina, and restore retinal function [3]. According to many researchers, the use of compound Xueshuantong capsule in the treatment of diabetic retinopathy has achieved certain results on the basis of laser treatment, in which the retinal edema resolution time and hospitalization duration were shorter in the experimental group; the visual acuity score and blood sugar levels were also better in the experimental group; the data obtained were consistent with the results of this

study [4].

In conclusion, for patients with diabetic retinopathy, the combined treatment of laser therapy with compound Xueshuantong capsule can effectively improve the clinical symptoms of patients, restore their retinal function, improve their blood circulation efficiency, and stabilize their blood glucose levels. Increasing the sample size for in-depth analysis in future studies may be beneficial to improving the validity of this treatment for patients with diabetic retinopathy.

Disclosure statement

The authors declare no conflict of interest.

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