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The therapeutic effect of physical factor therapy on chronic diseases

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Abstract

Objective: To explore and analyze the therapeutic effects of physical factor therapy on chronic diseases. Method: A total of 104 patients with chronic diseases admitted to our hospital from July 2023 to July 2024 were selected as the research subjects. They were divided into a physical group (n=52) and a reference group (n=52) using a double-blind mechanism. The physics group received physical therapy, while the reference group received basic treatment. Compare the treatment efficacy, quality of life, and treatment satisfaction between two groups. Result: The total effective rate of the physics group was significantly higher than that of the reference group (P<0.05), and the difference was statistically significant. Before treatment, there was no statistically significant difference in the quality of life, including social integration, mental state, physiological function, and overall health, between the two groups (P>0.05); After treatment, the physical group showed significantly higher levels of social integration, mental state, physiological function, and overall health compared to the control group (P<0.05). The overall treatment satisfaction of the physics group was significantly higher than that of the reference group (P<0.05), and the difference was statistically significant. Conclusion: Physical factor therapy has significant therapeutic effects on chronic diseases and is worth promoting.

Keywords: Physical factors; treatment; Chronic diseases

Physical factor therapy, as a non pharmacological treatment method, has gradually demonstrated its unique advantages in the treatment of chronic diseases. It utilizes natural or artificial physical factors, such as sound, light, electricity, magnetism, heat, etc., to act on the human body, and achieves prevention, treatment, and rehabilitation through physiological regulation mechanisms such as nerves, fluids, and endocrine systems [1-2]. Physical factor therapy has the characteristics

of non invasiveness, high safety, and wide applicability, especially suitable for the treatment and rehabilitation of chronic diseases. This article aims to study and analyze the therapeutic effects of physical factor therapy on chronic diseases. The report is as follows.

1. General Information and Methods

1.1 General Information

104 patients with chronic diseases admitted to our hospital from July 2023 to July 2024 were selected as the research subjects. They were divided into a physical group (n=52) and a reference group (n=52) using a double-blind mechanism. There were 27 male patients and 25 female patients in the physics group; The minimum age is 48 years old, the maximum age is 76 years old, and the average age is (62.87 ± 8.47) years old; The shortest course of illness is 1 year, the longest is 8 years, and the average course of illness is (4.95 ± 0.57) years. There were 28 male patients and 24 female patients in the reference group; The minimum age is 47 years old, the maximum age is 76 years old, and the average age is (62.96 ± 8.34) years old; The shortest course of illness is 1 year, the longest is 8.5 years, and the average course of illness is (4.99 ± 0.61) years. There was no statistically significant difference in general information such as gender, age, and disease duration between the two groups (P>0.05).

Inclusion criteria: (1) Meet the clinical diagnosis of chronic diseases. (2) Informed and agreed to the research content.

Exclusion criteria: (1) Patients with concurrent malignant tumors. (2) Merge autoimmune diseases. (3) Severe organ failure.

1.2 Method

The reference group received basic treatment based on medication.

The physics group provides physical therapy: (1) electrotherapy: direct current therapy: including electric water bath therapy, direct current iontophoresis therapy, etc., suitable for promoting local blood circulation, improving nutritional status, promoting exudate absorption, etc. Low frequency pulse electrical therapy: such as induction electrical therapy, electrical excitation therapy, electrical sleep therapy, etc., commonly used for pain relief, anti-inflammatory, and promoting muscle contraction. Intermediate frequency electrotherapy: such as equal amplitude intermediate frequency sine electrotherapy, modulated intermediate frequency sine electrotherapy, etc., suitable for sprains, contusions, myofibrositis, etc. High frequency electrotherapy: including short wave, ultra short wave, microwave, etc., with significant thermal and non thermal effects, commonly used for anti-inflammatory, analgesic, and tissue repair promotion. (2) Phototherapy: Infrared therapy: Utilizing the thermal effect of infrared radiation to promote local blood circulation, enhance metabolism, and accelerate tissue repair. Ultraviolet therapy: It has antibacterial, anti-inflammatory, and vitamin D synthesis promoting effects, but dosage control should be

taken into account. Laser therapy: Utilizing the strong electromagnetic field effect of lasers, it has anti-inflammatory, analgesic, hemostatic, sedative, and vasodilatory effects. (3) Temperature therapy: Heat therapy, such as hot compress, wax therapy, sand therapy, etc., enhances blood circulation, promotes inflammation absorption, and relieves pain through conduction of heat, radiation heat, and other methods. Cold therapy: such as ice therapy, cold air therapy, etc., achieves analgesic, anti-inflammatory, and spasm control effects by reducing local temperature. (4) Mechanical stimulation therapy: Ultrasonic therapy: using the mechanical vibration and thermal effect of ultrasound to promote local blood circulation, enhance tissue nutrition, and accelerate inflammation absorption. Massage therapy: Through manual massage, regulate central nervous system function, promote blood and lymphatic circulation, and improve muscle and joint function. (5) Magnetic therapy: Using a magnetic field to act on the body or acupoints, it produces biological effects and therapeutic effects by affecting the distribution of biological currents, charge operation status, etc. It has analgesic, anti-inflammatory, sedative and other effects. (6) Hydrotherapy: including water-based exercise therapy, bubble bath, vortex bath, etc., using the buoyancy, pressure, temperature and other characteristics of water to improve local blood circulation, promote inflammation absorption, and relieve pain. (7) Biological Stimulus Feedback Therapy: Combining biofeedback technology with neuromuscular electrical stimulation, by recording and analyzing the electrical signals during autonomous muscle contractions, providing feedback signals to help patients control and correct abnormal physiological changes.

1.3 Observation indicators

(1) Compare the therapeutic effects of two groups, including significant, effective, and ineffective.

(2) Compare the quality of life between two groups using the Brief Health Quality of Life Scale, which includes social integration, mental state, physiological function, and overall health.

(3) Compare the satisfaction levels of two treatment groups using a self-made scale, including very satisfied, relatively satisfied, and dissatisfied.

1.4 Statistical analysis

SPSS 21.0 statistical software was selected for data processing and analysis. Count data were expressed as cases (n) and percentages (%), and X2 test was performed. Metric data were expressed as mean ± standard deviation, and t-test was performed. ($P<0.05$) was considered statistically significant.

2 Results

2.1 Comparison of therapeutic effects between the physics group and the reference group

The total effective rate of physical therapy group was significantly higher than that of the reference group (P<0.05), and the difference was statistically significant. See Table 1 for details.

The comparison of treatment effects between the two groups in Table 1 is as follows [(n)%]

The number of cases in each group shows significant effectiveness, while the total effectiveness rate is ineffective

Physics Group 52 34 (65.38) 16 (30.77) 2 (3.85) 50 (96.15)

Reference group 52 21 (40.38) 22 (42.31) 9 (17.31) 43 (82.69)

X2 value -4.9814

P-value -0.0256

2.2 Comparing the quality of life between the physics group and the reference group

Before treatment, there was no statistically significant difference in the quality of life, including social integration, mental state, physiological function, and overall health, between the two groups (P>0.05); After treatment, the physical group showed significantly higher levels of social integration, mental state, physiological function, and overall health compared to the control group (P<0.05). See Table 2 for details.

The comparison of quality of life between the two groups in Table 2 is as follows (in points)

Group number, social integration, mental state, physiological function, overall health

Before and after treatment, before and after treatment

Physics group 52 56.87 ± 5.48 73.68 ± 9.48 57.84 ± 5.14 74.58 ± 9.67 54.14 ± 6.87 71.84 ± 10.57 52.41 ± 6.89 74.89 ± 7.84

Reference group 52 56.41 ± 5.29 64.74 ± 8.78 57.94 ± 5.36 65.84 ± 8.34 54.87 ± 6.29 62.59 ± 8.74 52.47 ± 6.89 66.87 ± 7.84

T-value -0.4355 4.9892 0.0971 4.9355 0.5651 4.8633 0.0444 5.6538

P-value -0.6641 0.0000 0.9228 0.0000 0.5732 0.0000 0.9647 0.0000

2.3 Comparison of treatment satisfaction between the physics group and the reference group

The overall treatment satisfaction of the physics group was significantly higher than that of the reference group (P<0.05), and the difference was statistically significant. See Table 3 for details.

The comparison of treatment satisfaction between the two groups in Table 3 is as follows [(n)%]

The number of cases in each group is very satisfied, relatively satisfied, dissatisfied, and overall treatment satisfaction

Physics Group 52 38 (73.08) 13 (25.00) 1 (1.92) 51 (98.08)

Reference group 52 27 (51.92) 18 (34.62) 7 (13.46) 45 (86.54)

X2 value -4.8750

P-value -0.0272

3 Conclusion

Analysis of the therapeutic effect of physical factor therapy on chronic diseases: Improving local blood circulation: Physical factor therapy, such as electrotherapy, hyperthermia, ultrasound therapy, etc., can promote local blood circulation through different mechanisms. For example, electrotherapy can dilate blood vessels and increase blood flow through the stimulation of electric current; Heat therapy expands blood vessels and promotes blood flow through thermal effects [4-5]. This helps improve the nutritional status of tissues, promote inflammation absorption and waste disposal, thereby accelerating the repair and regeneration of diseased tissues. Relieve pain: Various methods in physical factor therapy have analgesic effects. For example, electrotherapy can relieve pain by stimulating nerve endings to produce analgesic substances or by interfering with the transmission of pain signals; Ultrasonic therapy can change the excitability of nerve endings through its mechanical vibration, thereby relieving pain; Cold therapy can achieve analgesic effects by reducing local temperature and slowing down nerve conduction velocity [6-7]. Promoting inflammation resolution: Chronic inflammation is an important pathological feature of many chronic diseases. Physical factor therapy, such as shortwave therapy, microwave therapy, etc., can promote blood circulation in the inflamed area through its thermal and electromagnetic effects, enhance local tissue metabolism and nutritional status, thereby accelerating the absorption and resolution of inflammation. In addition, some physical factors can directly inhibit the production and release of inflammatory factors, reducing the inflammatory response. Promoting tissue repair: Ultrasound therapy and low-frequency pulse electrical therapy in physical factor therapy can promote the regeneration and repair of tissue cells [8-9]. For example, ultrasound therapy can promote the increase of cell membrane permeability through its mechanical vibration effect, accelerate the penetration of nutrients and the elimination of waste; The low-frequency pulse electrotherapy method can stimulate neuromuscular contraction and relaxation movements, promote blood circulation and

metabolism of muscle tissue, and accelerate muscle tissue repair and regeneration. Improving immune function: Physical factor therapy can also enhance the body's resistance by regulating its immune function. For example, magnetic therapy can regulate the immune function of the body by affecting the biological magnetic field, promoting the activation and proliferation of immune cells; The ultraviolet therapy in phototherapy can promote the synthesis of vitamin D in the body and enhance its immune function.

The experimental results are as follows: the total effective rate of the physics group was significantly higher than that of the reference group ($P<0.05$), and the difference was statistically significant. Before treatment, there was no statistically significant difference in the quality of life, including social integration, mental state, physiological function, and overall health, between the two groups ($P>0.05$); After treatment, the physical group showed significantly higher levels of social integration, mental state, physiological function, and overall health compared to the control group ($P<0.05$). The overall treatment satisfaction of the physics group was significantly higher than that of the reference group ($P<0.05$), and the difference was statistically significant.

In summary, physical factor therapy has broad application prospects and important clinical value in the treatment of chronic diseases. By improving local blood circulation, relieving pain, promoting inflammation resolution, facilitating tissue repair, enhancing immune function, and improving psychological status, physical factor therapy can effectively improve the symptoms and quality of life of patients with chronic diseases.

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