



CORRECTION OF DIABETIC POLYNEUROPATHY USING PHARMACOPUNCTURE METHOD

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ABSTRACT

Clinical data on the use of pharmacopuncture with cerebrum compositum in the treatment of diabetic polyneuropathy (DPN) in patients aged 40 to 65 years with type 2 diabetes mellitus (DM) are presented. Pharmacopuncture was used 3 times a week on the distal parts of the lower extremities, the course of treatment was 10–15 procedures. The use of pharmacopuncture with Cerebrum Compositum of the indicated parameters in patients with DPN led to an improvement in clinical indicators of neuropathy and made it possible to increase the conductivity of peripheral nerves by 1.5–2 times from the initial values, which was confirmed by electroneuromyography data.

KEY WORDS: *pharmacopuncture, diabetic polyneuropathy, cerebrum compositum.*

RELEVANCE

Diabetic polyneuropathy is a complex of symptoms indicating dysfunction and damage to nerve fibers that develop against the background of hyperglycemia. Disorders of all types of metabolism that develop during diabetes mellitus lead to the gradual death of nerve cells and a decrease in sensitivity, up to its complete loss. Diabetic neuropathy, like diabetes itself, leads to significant changes in the life and health of patients. The formation of DPN is based on the progressive loss of myelinated fibers - segmental demyelination and axonal degeneration, as a result of which the processes of impulse transmission along the nerve fiber are disrupted [4-7,9]. Hyperglycemia triggers a cascade of metabolic and vascular disorders that cause the development of DPN. In this regard, the first priority in the treatment of DPN should be normalization of glycemic levels. At the same time, patients with well-compensated diabetes may develop DPN. This dictates the need for complex therapy aimed at slowing the progression of nerve damage, and in some cases, partial rehabilitation. In this regard, of great interest is the use of pharmacopuncture, which has the largest range of biological effects: vasodilator, anti-inflammatory, increased muscle strength, decreased asymmetry of tendon reflexes, regenerative, antispasmodic effect [1-3]. Pharmacopuncture is a method based on the injection of various agents, mainly medications, into the area of reflexology points in order to achieve a therapeutic effect for various nosological forms [8,10,16,17]. There are several links in the healing mechanisms of this technology. On the one hand, changes in the volumetric characteristics of tissues in response to fluid injection provide prolonged stimulation of the point. On the other hand, the importance of the formed multiple depots of the drug is taken into account [11-15].

AIM

studying the effectiveness of pharmacopuncture with cerebrum compositum in the treatment of DPN in patients with type 2 diabetes.

MATERIALS AND METHODS OF RESEARCH

95 patients (50 men and 45 women) aged from 40 to 65 years with type 2 diabetes were under observation. The duration of diabetes ranged from 5 to 15 years. The criterion for inclusion in the study was the presence of DPN in patients. Almost all patients were in the stage of decompensated diabetes; the HbA1c level ranged from 9.6–13.2%. Changes in the peripheral nervous system were assessed using objective signs using the Neuropathic Dysfunctional Score - NDS, which includes the results of a study of tactile, pain and temperature sensitivity. In addition, the following ENMG indicators were assessed: amplitude of the M-response (mV), impulse conduction velocity (ISV, m/s), residual latency value (RL, m/s), amplitude of the sensory potential (PD, μ V). Tactile sensitivity was determined using a 10-gram monofilament, pain sensitivity using a needle prick, temperature sensitivity - using the "Thio-Therm" instrument, reflexes were determined in the usual way. ENMG was performed on Neuro-EMG-Micro-2 (Russia). The severity of neuropathy was assessed according to the classification proposed by P. Dyck and P. Thomas (1999) [8](table 1).



Table 1
Stage of severity of diabetic polyneuropathy

DPN stage	Characteristic
Stage 0	There are no symptoms or signs of DPN, autonomic tests are negative, EMG examination of motor and sensory peripheral nerves (at least two on one side) does not reveal pathology
Stage 1 – subclinical (1a, 1b)	1a – there are no symptoms or objective neurological signs of DPN; a combination of any two changes identified during an EMG study of the motor and sensory nerves on one side; 1b – no symptoms; clinical examination reveals two or more objective neurological signs of DPN on one side
Stage 2 – clinical (2a, 2b)	2a – complaints typical for DPN; sensory, motor, autonomic disorders, without signs of weakness of the foot flexors (the patient can stand on his heels); 2b – the same + signs of weakness of the foot flexors (the patient cannot stand on his heels)
Stage 3 – severe	Disabling Neuropathy

Pharmacopuncture was carried out by subcutaneous injection of Cerebrum compositum into the area of the point, based on a volume of 0.2-0.3 ml per locus, 3 times a week on the distal parts of the lower extremities. During one procedure, a total of about 2.2 ml of the drug was injected into the points, which is equal to the volume of one ampoule. The course of treatment was 10–15 procedures.

RESULTS AND ITS DISCUSSION

Upon admission, all 95 patients complained of a feeling of fatigue in the lower extremities, moderate, episodic pain in the legs after physical activity and in the evening - 41 (43%) patients, paresthesia - 29 (31%), numbness and burning, chilliness in the lower extremities limbs – 25 (26%). Сенсорные нарушения в виде расстройств температурной sensitivity was detected in 86 (91%) patients, pain sensitivity - in 73 (77%), tactile sensitivity - in 14 (15%), decreased Achilles reflexes - in 56 (59%), knee - in 34 (36%) sick. The quantitative average score of objective neurological symptoms on the NDS scale was 7.2±2.8 points. An ENMG study revealed signs of chronic demyelinating distal sensorimotor neuropathy in 84% of patients. When assessing ENMG, changes in the n.peroneus motor nerve were most often determined (in 78 patients) in the form of a decrease in the amplitude of the M-response (in 52), less often - SPI (in 52), an increase in RL (in 36). Changes in ENMG indicators on n.tibialis were detected in 74 patients in the form of a decrease in the amplitude of the M-response (in 64), to a lesser extent, SPI (in 43), and an increase in RL (in 38). A decrease in sensory (sensitive) potential during stimulation of n.suralis was observed much less frequently - in 29 patients (Table 2). All patients showed changes in two or more studied parameters.

Table 2
ENMG indicators of DPN before treatment

Indicators	Motor Nerves		Sensory Nerve– N. Suralis
	N. Peroneus	N. Tibialis	
M-response, mV	52	54	–
SPI, m/s	45	38	–
RL, m/s	27	29	–
PD, μV (sensitive potential)	–	–	33

As a result of the examination, stage 1b DPN severity was detected in 23 children (24%), stage 2a – in 46 (49%); Stage 2b – in 26 patients (27%).

Table 3
Dynamics of manifestations of DPN and ENMG indicators 1 month after treatment

Indicators	Observation time	Originally	In 1 month	
			1st group	2nd group
Assessment of objective signs	NDS, points	7,2±2,8	5,3±1,7	4,2±0,8*
ENMG indicators	M-response, mV	1,3±0,4	1,6±1,8	3,4±0,5*
	SPI, m/s	36,9±1,6	37,8±3,4	56,7±1,4*
	RL, m/s	5,4±1,0	4,6±1,4	3,2±0,9*

* p<0,05; ** p<0,01 when compared with values before treatment



To assess the effectiveness of pharmacopuncture with *Cerebrum compositum*, all patients were divided into 2 groups: group 1 included 50 patients whose glycemic levels were corrected in the form of changes in the insulin dose and diet; The 2nd group consisted of 45 patients who, along with the correction of carbohydrate metabolism, were prescribed pharmacopuncture with *Cerebrum compositum* on the distal parts of the lower extremities. After 1 month, the effectiveness of treatment was assessed in the 2 study groups. In group 1, the majority of patients still had complaints and sensory disturbances; total points on the NDS scale – 5.3 ± 1.7 points (versus 7.2 ± 2.8 points initially).

In the 2nd group of children who were prescribed pharmacopuncture with *Cerebrum compositum* in the treatment of DPN, significant positive dynamics were noted. Almost all patients noted a decrease in leg pain. When assessing sensory changes on the NDS scale, the total score was 4.2 ± 0.8 points ($p < 0.05$), mainly an improvement in temperature (in 63 children) and pain (in 54 patients) sensitivity was noted.

When the ENMG examination was repeated, positive dynamics were obtained only in the 2nd group of children in the form of an increase in SPI (56.7 m/s versus 36.3 m/s), normalization of M-response parameters (3.4 mV versus 1.3 mV), decrease in RL (3.4 m/s versus 5.1 m/s) compared to the initial data (Table 3).

CONCLUSIONS

Thus, the use of pharmacopuncture with *cerebrum compositum* made it possible to increase peripheral nerves by 1.5-2 times from the initial values. The availability of this method allows us to recommend its use in the complex treatment of DPN in patients with type 2 diabetes.

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