

POINT STIMULATION WITH ESSENTIAL OILS IN COMPLEX TREATMENT OF LUMBOSACRAL DORSOPATHIES

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SUMMARY

The material is devoted to the analysis of the main mechanisms and comparative assessment of the effectiveness of various options for the cutaneous use of essential oils in dorsopathies.

Materials and methods. 90 patients (women and men) with exacerbation of lumbosacral dorsopathy were selected. In the course of the study, along with neurological, psychological and electrophysiological analysis was carried out. The observed individuals were divided into three randomized groups, each of 30 people in which standard treatment was performed standard treatment. In addition to this, in the first two, main groups, a mixture of essential oils was used: in the 1st group by massaging the lumbosacral zone, in the 2nd – biopuncture, with its application to the area of segmental and distant acupuncture points. In the 3rd, control group, sesame oil was applied to the area of the same points as a placebo.

Results and conclusion. The results of the study confirmed the effectiveness of both types of use of essential oils, exceeding, at the level of reliability, the indicators of the control group. However, in the main groups, the rates of sustained analgesia varied, achieved on average after 7.2 procedures in the 1st and 5.5 in the 2nd group. In a similar proportion, the final intensity of pain also decreased – by 51.7 and 65 %, respectively, compared with the initial one. According to the delayed assessment performed after six months, exacerbations of the process in the control group were noted in a third of patients, while in the main groups they were observed in a comparably smaller number. Nevertheless, there are differences in the severity of periodically occurring algia: in the 2nd group they increased slightly, while in others they increased to a significantly greater extent. At the same time, the data of rheovasograms testified in favor of greater stability of the results in the 2nd group.

The noted advantage of biopuncture with essential oils can be explained by the cumulative effect inherent in the methods of reflexology. In addition, this technique, given the physiology, can be an addition to more aggressive types (classical acupuncture, electrical stimulation) of physical exposure.

KEYWORDS: dorsopathies, essential oils, reflexology, biopuncture, massage

CONFLICT OF INTEREST. The authors declare no conflict of interest.

ТОЧЕЧНАЯ СТИМУЛЯЦИЯ ЭФИРНЫМИ МАСЛАМИ В КОМПЛЕКСНОМ ВОЗДЕЙСТВИИ ПРИ ПОЯСНИЧНО-КРЕСТЦОВЫХ ДОРСОПАТИЯХ

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РЕЗЮМЕ

Работа посвящена анализу механизмов и оценки эффективности различных способов местного использования эфирных масел при вертеброгенной патологии.

Материалы и методы. Под наблюдением находилось 90 пациентов (38 женщин и 52 мужчины в возрасте от 40 до 75 лет с обострением дорсопатии на пояснично-крестцовом уровне. Наряду с неврологическим в работе был выполнен психологический (с применением анкетных методов) и электрофизиологический анализ, включающий термографию, реовазографию и ультразвуковую доплерографию сосудов голени и стоп. Было сформировано три группы из 30 пациентов каждая, в которых выполняли стандартное лечение. Дополнительно к этому в двух первых группах использовали смесь эфирных масел. В 1-й группе с применением данного состава выполняли массаж пояснично-крестцовой зоны, во 2-й использовали способ биопунктуры, т.е., нанося минимальные дозы смеси на проекции точек рефлексотерапии. В 3-ей, контрольной группе на область точек наносили кунжутное масло в качестве плацебо.

Результаты и заключение. В ходе работы подтверждена результативность обоих видов применения эфирных масел, достоверно превосходя в этом отношении показатели контроля. Однако при этом устойчивая анальгезия достигалась во 2-й группе достоверно ранее, чем в 1-й: в близкой к этому пропорции снижалась и итоговая интенсивность болевых ощущений. С другой стороны, в обеих группах использования масел прослеживалось сопоставимое улучшение зонального сосудистого обеспечения, подтвержденное электрофизиологически.

В ходе катamnестической оценки рецидивы дорсопатии в группе контроля были фиксированы у трети пациентов, тогда как в случае использования эфирных масел – в сопоставимо меньшем количестве. Тем не менее, в этих группах отмечены различия в выраженности периодически возникающих алгий: во 2-й группе они росли незначительно, тогда как в других – в большей степени. Кроме того, данные реовазограмм однозначно свидетельствовали в пользу большей устойчивости результатов именно во 2-й группе. Отмеченное преимущество биопунктуры эфирными маслами может быть объяснено кумулятивным эффектом, свойственным способам рефлексотерапии.

КЛЮЧЕВЫЕ СЛОВА: дорсопатии, эфирные масла, рефлексотерапия, биопунктура, массаж.

КОНФЛИКТ ИНТЕРЕСОВ. Авторы заявляют об отсутствии конфликта интересов.

Introduction

The medical and social significance of dorsopathies, especially those formed at the lumbosacral level, is determined by the prevalence and protracted course of the process, leading in some cases to serious consequences. A distinctive feature of these conditions is also resistance to generally accepted therapeutic approaches [2,5,12,14], which explains the growing interest in other correction options [1,3]. The use of essential oils should be attributed to such, and insufficiently studied [6,10,15].

A standard technique for their topical application is massage, which contributes, among other effects, to blocking pain signals [7,13]. However, this effect is also inherent in other types of physical exposure [2,3], including biopuncture – an original technique for stimulating reflexology points with small doses of agents quoted by low-energy factors [1,9,11]. Moreover, in the case of such use of oils, it is possible to foresee an increase in the effectiveness of exposure due to the addition of several therapeutic links. In this regard, it seems relevant to compare the therapeutic capabilities of standard and biopuncture techniques for the use of essential oils, which led to the implementation of this study.

Materials and methods

90 patients (38 women and 52 men aged 40 to 75 years) with exacerbation of dorsopathy at the lumbosacral level were under observation. The duration of the disease averaged 18.6 years, with a prevalence (in 2/3 of cases) in the range from 5 to 10 years. Most patients noted up to 2 exacerbations per year, with the duration of the latter more than two months.

The assessment of the patients' condition was based on the results of a comprehensive examination, including radiography and/or computed tomography and magnetic resonance imaging. In addition to neurological, psychological and electrophysiological analysis was performed. For the purpose of conditional objectification of the pain phenomenon, a visual-analogue scale (VAS) was used. To clarify the nature of changes in the mental sphere, the tests of the «Multilateral Personality Study» (MIL) and the «wellness-activity-mood» (WAM) tests were used. The complex of electrophysiological methods included thermography (AGA-782 device), rheovasography (Bioset-6001) and Doppler ultrasound of the vessels of the legs and feet (Acuson X300).

In the work, three groups were identified by randomization, 30 patients each. As a standard, the groups used a minimum amount of medication, magnetotherapy for the lumbosacral zone and the lower extremities area daily No. 10, as well as exercise therapy. In addition to this, in the first two

groups, a mixture of essential oils of Cayuput, Wintergreen, Rosemary shown in algia [11], dissolved in a base sesame oil, was used, observing standard WAMitary and hygienic requirements [13]. In the 1st comparison group, massage of the lumbosacral zone was performed using this composition. In the 2nd, main group, minimal doses of the mixture were applied to the projection of segmental and distant points of reflexology. In the 3rd control group, small doses of sesame oil were applied to the area of these points as a placebo. The treatment cycle in all groups included 10 procedures.

The effectiveness of treatment was assessed according to standard parameters, using parametric and nonparametric statistical methods within the framework of the Statistica for Windows v. 7 program. After 6 months, a follow-up analysis was performed.

Results and discussion

In the examined group of patients, the prevalence of reflex over radicular syndromes was found in 64 versus 26 cases. At the same time, the vascular «pattern» of the process, noted in 73 (81 %) cases, was confirmed by the results of functional tests. In the course of assessing the intensity of algia using VAS, two equal subgroups with moderate and severe levels of pain were identified. As a result of clinical and psychological analysis, 68 (75 %) patients showed changes in the form of an affective component (in a third of cases) and astheno-neuroticism in other cases. In the first embodiment, the average MIL graph was distinguished by a slight peak (within 62 T-points) on the 1st scale and a rise on the right side of the profile, mainly in the 6th position. At the same time, the WAM test scores were moderately reduced (out of reliability with control) to an average of 47 points. In astheno-neurotic conditions, an increase in the MIL profile on the 1st scale (up to 73 T-points) was combined with a peak on the right side of the graph. There was also a decrease in the WAM test scores to 42–44 points.

In the process of thermography, foci of hyperthermia in the lumbosacral zone and hypothermia zones in the lower extremities, mainly on the side of pain, were revealed. According to rheovasography, the majority (78 %) of patients had a significant decrease in pulse blood filling of the distal parts of the lower extremities, with signs of tonic or spastic-atonie state of the arteries on the «affected» side. Doppler sonography confirmed the severity of shifts in the posterior tibial and arteries of the back of the foot in the form of a drop in volumetric blood flow in the vessels on the side of pain, with ambiguous changes in linear velocity. The noted

Table 1
Effectiveness of the compared methods (in %)

Groups	Indicators							
	Significant improvement		Improvement		Slight effect		Deterioration	
	Abs.	%	Abs.	%	Abs.	%	Aabs.	%
1 (30)	9	30	9	30	12	40	-	-
2 (30)	10	33,3	9	30	10	36,7	1	0,3
3 (30)	5	16,6	10	33,3	15	51,1	-	-
Pearson test χ^2		$\chi^2_{1,2}=1,71$ ($p>0,05$) $\chi^2_{1,3}=10,1$ ($p<0,05$) $\chi^2_{2,3}=10,2$ ($p<0,05$)						

Note: the number of observations in parentheses.

Table 2
Group pain regression ($M\pm m$)

Groups	Pain level (cm)	
	Before	After
1	5,6 \pm 0,6	2,7 \pm 0,4*
2	5,6 \pm 0,5	1,9 \pm 0,3*
3	5,7 \pm 0,6	2,9 \pm 0,4

Note: * – reliability ($p<0,05$) of changes in each of the indicators according to the Student's criterion.

Table 3
Regression of the severity of thermoasymmetry in the region of the legs in groups ($M\pm m$)

Groups	Severity of asymmetry ($\Delta t^\circ C$)	
	Before	After
1 (28)	1,38 \pm 0,10	0,79 \pm 0,10*
2 (26)	1,37 \pm 0,11	0,77 \pm 0,11*
3 (28)	1,37 \pm 0,13	1,18 \pm 0,13

Note: in parentheses – the number of observations; * – reliability ($p<0,05$) of changes according to the Student's criterion.

Table 4
Dynamics of lower leg rheovasograms in groups ($M\pm m$)

Group	Indicators					
	RI (Om)		DI		VP (c)	
	Before	After	Before	After	Before	After
1 (24)	0,046 \pm 0,004	0,061 \pm 0,007*	0,34 \pm 0,05	0,36 \pm 0,04	0,12 \pm 0,007	0,11 \pm 0,006
2 (25)	0,045 \pm 0,005	0,062 \pm 0,006*	0,35 \pm 0,06	0,37 \pm 0,05	0,12 \pm 0,008	0,10 \pm 0,011
3 (22)	0,046 \pm 0,006	0,050 \pm 0,006	0,34 \pm 0,05	0,33 \pm 0,04	0,12 \pm 0,010	0,12 \pm 0,09
Control	0,07 \pm 0,01		0,39 \pm 0,06		0,09 \pm 0,007	

Note: in parentheses – the number of observations; RI – rheographic index, DI – diastolic index, VP – pulse wave rise time; * – reliability ($p<0,05$) of changes according to the Student's criterion.

features provided a transition to the solution of the main task – comparing the effectiveness and therapeutic reliability of the compared technologies.

At the same time, the dynamics of the evaluated indicators confirmed the greater effectiveness of both types of use of essential oils in the form of a total «improvement of the condition» in 60 and 63.3 % of cases, respectively, significantly exceeding the control indicators (Table 1).

Reflex states, which make up the bulk of the study, turned out to be more «malleable» to the impact. In addition, biopuncture with essential oils, as the most physiological technique, showed significantly better results in the group of patients over 60 years of age, which to a certain extent agrees with the literature [15].

However, in the groups of oil use, the rates of sustained analgesia differed, achieved on average after 7.2 procedures in the 1st and 5.5 in the 2nd group. Taking into account the frequency of procedures dispensed every other day, a positive result was observed on average by 15 and 11 days of exposure. In a similar proportion, the total intensity of pain decreased – by 51.7 and 65 %, respectively, compared with the initial one (Table 2).

The noted advantage of biopuncture with oils in relieving pain, to a certain extent a psychological phenomenon, can be explained both by the actual irritation of the reflexology points and by the relaxing effect of low dosages of aromas.

In this regard, it becomes clear that the most favorable shifts in mental status were traced in response to the use of this technology. In particular, 68 % of patients indicated a decrease in affective tension and irritability – against 43 % and 33 % of cases, respectively, in the 1st and 3rd groups. Clinical characteristics were confirmed during testing: the analysis of the MIL test reflected a significant drop in the average peak on the 1st scale and a more favorable arrangement of the right positions of the graph only in the main group. In addition to this, there was a uniform increase in the average WAM indicators.

On the other hand, in both cases of the use of essential oils, similar changes in thermogram parameters were traced. In particular, the severity of thermoasymmetry at the level of the lower back decreased on average from 1.4 \pm 0.08 $^\circ C$ to 0.75 \pm 0.02 $^\circ C$, within the limits of statistical significance, while in the placebo group – from 1.3 \pm 0.07 to 1.0 \pm 0.04 $^\circ C$ ($p\geq 0,05$). A similar pattern was observed in the area of the lower extremities (Table 3).

In these two result groups, a comparable improvement in the rheographic characteristics (RI – reliably) of the legs was also revealed. On the contrary, in the control group, the persistence of «vascular» complaints was combined with minor changes in rheogram parameters (Table 4)

The results of Doppler ultrasound were consistent with the indicators of thermo- and rheographic examination, confirming the positive vascular effect of both groups of essential oil use.

Table 5
Frequency of exacerbations of dorsopathy in groups

Groups	Number of observations	Number of exacerbations	
		Abs.	%
1	25	6	24
2	23	5	21,7
3	24	8	32

Table 6
Dynamics of the level of pain in groups (M±m)

Group	Level of algia (in cm)	
	By the end of treatment	Six months later
1	2,7 ±0,4	3,7±0,5
2	1,9±0,3	2,3±0,4
3	2,9±0,4	4,5±0,6*

Note: * is the reliability ($p < 0.05$) of changes according to the Student's criterion.

Thus, upon completion of treatment, the advantage of the options for using oils over placebo effects in achieving general clinical and vascular effects was established, however, with a significant superiority of the biopuncture scheme in the implementation of analgesic and psychotropic effects.

During the follow-up evaluation, recurrences of dorsopathy in the control group were noted in a third of patients, while in the case of the use of essential oils, there were comparably fewer (Table 5).

At the same time, differences in the severity of periodically occurring algia were revealed: in the main group, their intensity increased slightly, while in others to a greater extent, and in the control group, significantly (Table 6).

These data were consistent with the results of the assessment of the mental state of patients: in the biopuncture group, its satisfactory level was noted, while in more than half of the patients of other groups, complaints of the astheno-neurotic circle increased.

The shifts established in the course of electrophysiological analysis and, in particular, rheovasography and Doppler sonography unequivocally testified in favor of greater stability of indicators in the case of biopuncture with essential oils, even relative to the comparison group.

Conclusion

Immediately upon completion of treatment, both options for the use of oils exceeded the placebo effect in achieving

the overall clinical and vascular effects, however, with a more distinct (reliable) analgesic and psychotropic effect of biopuncture. This advantage can be explained both by the actual irritation of the reflexology points and by the relaxing effect of low dosages of aromas.

The follow-up stage of the study also reflected differences in the degree of stability of the results achieved – both in terms of the level of recurrent pain and vascular support, which can be explained by the cumulative effect inherent in the methods of reflexology. In this case, the proposed method, which is distinguished by the addition of several therapeutic links, may be a component of programs for correcting the manifestations of dorsopathy. In addition, this technique, given the physiology, can be an addition to more aggressive types (classical acupuncture, electrical stimulation, etc.) of physical exposure.

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