



Research Article

ISSN : 2277-3657
CODEN(USA) : IJPRPM

The Use of the New Dietary Supplement with Lake Salts in Treating Primary Dysmenorrhea

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ABSTRACT

For centuries, plants and minerals have been used for treating symptoms of dysmenorrhea, relieving pain, restoring lost nutrients, and improving the quality of life. For our study, we employed a new dietary supplement that is plant-based and consists of burdock root, cranberry extract, underground and above-ground parts of marsh cinquefoil, and natural mineral salt of Siberian lakes. The patients (girls in puberty) had neither identified underlying health conditions nor recorded allergic reactions. To examine cardiovascular conditions, cardiovascular tests were carried out before and after the treatment. The assessment of the autonomic nervous system functioning included tests targeted at evaluating the operation of the sympathetic nervous system (like handgrip tests) as well as tests examining the functions of the parasympathetic nervous system (deep breathing and Valsalva maneuver). The patients were administered the dietary supplement to be consumed three times a day, together with cyclic vitamin therapy and electrotherapy treatment. Upon the completion of our study, we established that the use of the dietary supplement provides a positive impact on the course of treatment.

Key words: Dietary supplement, Dysmenorrhea, Cardiovascular tests, Neurohumoral regulation

INTRODUCTION

Dietary supplements are among the most accessible and effective solutions for correcting nutrition and supporting general well-being [1-13]. The use of dietary supplements, along with medical therapy, is gaining more importance in treating common health conditions, with dysmenorrhea being one of them. In most cases, treatment for dysmenorrhea includes medication and nutrition support [14, 15].

MATERIALS AND METHODS

The present study describes the use of a new dietary supplement in treating menstrual disorders of girls in puberty (aged 15 +/- 0.5). The dietary supplement used for the treatment is plant-based and consists of (per 120 grams): *Arctium lappa* (burdock root) - 10g, *Vaccinium macrocarpon* (cranberry) extract - 6g, underground and above-ground parts of *Comarum palustre* (marsh cinquefoil) - 2.4g; Isobel (natural mineral salt found in Siberian lakes) - 6g; and sorbitol - 104.4g.

The dietary supplement meets the following nutritional requirements for functional foods (% , not less than): lipid content - 0.05, polyphenolic compounds content (calculated as tannin) - 0.7, organic acids content (calculated as malic acid) - 1.5, magnesium - 0.3.

The patients were administered 1 teaspoonful of the dietary supplement to be consumed three times a day, with the dietary supplement dissolved in 100cm³ of water before taking it. The patients were also prescribed to take 1 tablet of Pentovit three times a day during the first part of treatment, and then 1 capsule of Aevit three times a day during the second part (both vitamin supplements are part of cyclic vitamin therapy and are typically used in the treatment of dysmenorrhea in puberty). Additionally, all the patients received 10 sessions of electrotherapy treatment with the electrode pads well-soaked in 1% solution of the supplement applied to the pelvic area.

The study was carried out under the supervision of N.M. Usynina, an obstetrician-gynecologist of Tomsk antenatal clinic No 4. The patients chosen for the study complained of throbbing and cramping pains, dizziness, malaise, and extreme fatigue which they experienced during their periods.

RESULTS AND DISCUSSION

According to the data from previous gynecological examinations, the examined patients had their menarche at the age of 11 or 12; their periods were regular and painful, with menstrual flow occurring every 28 to 31 days and lasting from three to five days. The patients had no records of allergic reactions; neither gynecological conditions nor venereal diseases were identified.

Upon admittance, the patients underwent physical examinations. The results did not indicate any abnormalities in the uterus shape or mobility, with the palpation being painless. The uterine appendages were painless, without abnormalities. Leucorrhoea was moderate, odorless, white, and of normal consistency, which led to the exclusion of the possibility of reproductive system disorders.

Further study of the pelvic organs included the ultrasound examination to assess the size (2-3mm, 2-5mm) and the number of follicles (normal count); the shape (normal), and size (48±5; 36±0.8; 48±0.4) of the uterus, and the myometrium (homogeneous). The data obtained from the smear tests and the data on the immune status are presented in **Tables 1 and 2**.

Table 1. Bacterioscopic examination data

Variables	The cervical canal	The vaginal vault	The urethra
Leukocytes	8-12	15-25	0-3
Epithelium	columnar	squamous	columnar
Döderlein bacillus	no reaction	no reaction	no reaction
Aerobic flora	8-16	20-24	0-1
Anaerobic flora	20-28	36-40	0-3
Candidae albicans	no reaction	+0	0
Neisseria gonorrhoeae	no reaction	no reaction	no reaction
Trichomonas vaginalis	no reaction	no reaction	no reaction

Table 2. The immune status

Variables	Fact	Norm
Leukocytes	8.9	(4.5-8.0x10 g/l)
Basophils	20 (0-1%)	(20-100)
Eosinophils	2 (2-5%)	(100-300)
Stab	2 (2-4%)	178 (100-300)
Segmented	78 (40-60%)	1798 (1080-4080)
Monocytes	2 (4-8)	178 (200-600)
Lymphocytes	18 (25-45%)	1404 (1200-2800)
CD 3	64	(65-79%)
CD 4	28	(34-44%)
CD 8	28	(19-27%)
CD 16	1	(6-18%)

CD 72	15	(3-15%)
CD 25	4	-
CD 95	7	-
Ig M	1.04	(0.8-2.5)
Ig G	10.13	(8.0-16.0)
Ig A	0.55	(0.7-3.0)
CICs	0.2	(0.040-0.100)

It should be noted that all the patients demonstrated excessive anxiety. To assess the neurohumoral regulation and evaluate the influence of the nervous system on the vital life processes, we assessed the data from the spectrum analysis and the spectrogram to calculate Total Power.

Taking into account the results of the tests, examinations, and the records of patient complaints, the patients were diagnosed with primary dysmenorrhea. No concomitant medical conditions were confirmed.

The patients were prescribed:

1. 1 teaspoonful of the dietary supplement to be consumed three times a day, with the dietary supplement dissolved in 100cm³ of water before taking. The starting day of the treatment is day 1 of the cycle, and the treatment length is one month.
2. 10 sessions of electrotherapy treatment with the electrode pads well-soaked in 1% solution of the supplement applied to the pelvic area.

On Day 14 of the therapy, the patients had no complaints. The next cycle was less painful, and patients' general well-being improved.

The assessment of the treatment effectiveness was carried out 1 and 3 months from the start. The data on the immune status are presented in **Table 3**.

Table 3. The immune status before and after the treatment

Variables	Before treatment	After treatment	Normal values
Leukocytes	6.23	6.15	4.5-8.0%
Stab	1	-	2-4%
Segmented	46	53	40-60%
Lymphocytes	52	35	25-45%
Monocytes	1	7	4-8%
CD 3	76	68	65-79%
CD 4	31	39	34-44%
CD 8	46	30	19-27%
CD 16	1	8	6-18%
CD 72	15	15	3-15%
CD 25	4	1	
CD 95	7	8	
Ig M	1.04	1.73	0.8-2.5%
Ig G	10.13	15.64	8.0-16.0%
Ig A	0.55	2.22	0.7-3.0%
CICs	0.12	0.120	0.040-0.100

The data obtained from the cardiovascular tests are presented in **Table 4**.

Table 4. Cardiovascular tests data

Test	Normal values	Borderline values	Pathology	Before taking dietary supplement	After taking dietary supplement
Deep breathing ratio	>1.4	1.2-1.4	<1.2	1.0	1.04
Active orthostatic ratio	>1.35	1.2-1.35	<1.2	1.1	1.07

Valsalva maneuver ratio	>1.7	1.3-1.7	<1.3	1.2	2.89
Active orthostatic	<11	11-25	>25	-4	-4
Isometric handgrip	>15	10-15	<10	0	-1

The sympathetic division of the autonomic nervous system stimulates quick mobilization of all body organs and systems to regulate physiological processes, while the parasympathetic division is responsible for the day-to-day control of the body functions. Therefore, before treatment, there was noticeable impairment in the regulation of physiological processes and moderate mobilization of defense mechanisms. The data on the spectrum analysis of the neurohumoral regulation before and after treatment are shown in **Tables 5 and 6**.

Table 5. The data on the spectrum analysis of the neurohumoral regulation before treatment

Test	TP	VLF	LF	HF	LF/HF %	VLF %	LF %	HF %	RR min	RR max	RRNN	SDNN
Baseline	2457	789	287	1503	0.43	32	14	62	689	1093	843	52
Deep breathing	3206	223	1315	1596	0.87	8	39	51	714	933	815	53
Valsalva maneuver	2788	254	355	2179	0.16	9	13	78	708	928	814	49
Orthostatic	1035	604	254	178	1.4	58	25	17	669	823	745	30
Isometric handgrip	9270	1629	3820	3821	1	18	41	41	263	843	736	87

The total power of the neurohumoral modulation was registered as being moderate. The same was true for vagal modulation and humoral-metabolic (cerebral ergotropic) modulation with a low level of sympathetic division influence. The activity of the parasympathetic division prevailed. The functional capacity was found to be satisfactory (8).

The results of the orthostatic test indicated decreased reactivity of the parasympathetic division. The activity of the sympathetic system of the autonomic nervous system was determined to be adequate. Coping capacity was found to be very low (-8).

Table 6. The data on the spectrum analysis of the neurohumoral regulation after treatment

Test	TP	VLF	LF	HF	LF/HF %	VLF %	LF %	HF %	RR min	RR max	RRNN	SDNN
Baseline	2181	823	295	1073	0,27	39	13	50	683	936	799	42
Deep breathing	1530	1166	249	116	2,1	76	16	8	635	812	710	38
Valsalva maneuver	13708	938	5421	7349	0,74	7	40	54	293	1622	813	119
Orthostatic	3120	627	1099	1394	0,79	20	35	45	193	1432	701	60
Isometric handgrip	1077	661	312	104	3	61	29	10	651	795	711	28

After treatment, the neurohumoral regulation is denoted by the moderate spectrum of the total power of the neurohumoral modulation, with a similar level of vagal and humoral-metabolic (cerebral ergotropic) influences and a low influence of the parasympathetic division on the activation of the heart rate. The parasympathetic division is more active. The functional capacity is established to be satisfactory (5).

Decreased parasympathetic reactivity is demonstrated by the results of the orthostatic test. The orthostatic test shows the adequate sympathetic activity of the autonomic nervous system. Coping capacity is found to be satisfactory with the normal functioning of the physiological system.

CONCLUSION

It was concluded that the use of the dietary supplement in treating primary dysmenorrhea improves the quality of the treatment, shortens the treatment length, provides lasting effects, positively influences the neurohumoral regulation, and reduces pain.

ACKNOWLEDGMENTS : None

CONFLICT OF INTEREST : None

FINANCIAL SUPPORT : None

ETHICS STATEMENT : None

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