



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.3533798>
Available online at: <http://www.iajps.com>

Research Article

DYSMENORRHEA OF ADOLESCENTS

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Abstract:

According to modern scientific literature, up to 80% of women suffer from dysmenorrhea. At the same time, 10% of women every month lose the ability to work during these days. The most pronounced symptoms appear in adolescence. The aim of our study was to investigate the endocrine profile of female adolescents diagnosed with dysmenorrhea. **Material and research methods.** We analyzed 31 case reports of female adolescents who were treated in the children's clinical sanatorium "Zdravniitsa" in Yevpatoriya (Republic of Crimea), aged from 13 to 17 (average age 15.3 ± 2.2 y.o.) with dysmenorrhea, of whom 18 (58%) were adolescents and belonged to the age group 13-14 y.o., and 13 (42%) belonged to 15-17 y.o. **Results and its discussion.** When conducting a general clinical examination, dysmenorrhea was manifested by a headache, mood disturbance, nausea, and vomiting. Particular attention is drawn to the severity of pain in most of the studied patients. In the second age group, there is an aggravation of the dysmenorrhea symptoms. The concentration of estradiol in the blood serum of female adolescents of 13-14 years old is significantly lower by 0.14 ± 0.004 nmol / L compared with the control group. In girls aged 15-17, estradiol is reduced by 0.17 ± 0.004 nmol / L. In the first age group, the concentration of progesterone in the first phase is 2.7 times lower, in the second phase of the cycle it was 0.30 ± 0.02 nmol / L, which is 11.0 times lower compared to healthy peers ($p < 0.05$). In female adolescents aged 15-17, the level of progesterone is 2.7 lower in the first phase and 11.6 in the second. **Conclusion.** In female adolescents with dysmenorrhea, the level of steroid hormones (estradiol, progesterone, testosterone) is low, the level of gonadotropic hormones is significantly lower in the second age group, with unchanged indicators of cortisol and prolactin. In the absence of timely treatment, the course of dysmenorrhea is aggravated, severe combined forms develop.

Keywords. Teenagers, disorders menstrual cycle, dysmenorrhea.

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Please cite this article in press Ivanov I. I et al., *Dysmenorrhea Of Adolescents.*, Indo Am. J. P. Sci, 2019; 06[11].

INTRODUCTION:

According to modern scientific literature, up to 80% of women suffer from dysmenorrhea [1, 2]. At the same time, 10% of women every month lose the ability to work during these days [3,5]. The most pronounced symptoms appear in adolescence. With severe pain syndrome, dysmenorrhea occurs in 84% of adolescents, up to 79.5 combined with diarrhea, 80% with vomiting, 22.7% with dizziness, 13.6 with a swoon [6,7]. The frequency and severity of symptoms depend on heredity, the nature of physical labor, exposure to an infectious agent, and stress [8,9,10]. But in adolescence, the question of the relationship between the level of hormones in the blood and the severity of symptoms in dysmenorrhea remains debatable [11,12].

The aim of our study was to investigate the endocrine profile of female adolescents diagnosed with dysmenorrhea.

MATERIAL AND RESEARCH METHODS:

We analyzed 31 case reports of female adolescents who were treated in the children's clinical sanatorium "Zdravnitsa" in Yevpatoriya (Republic of Crimea), aged from 13 to 17 (average age 15.3 ± 2.2 y.o.) with dysmenorrhea, of whom 18 (58%) were adolescents and belonged to the age group 13-14 y.o., and 13 (42%) belonged to 15-17 y.o. The diagnosis was established according to ICD-X.

The control group included gynecologically healthy adolescents who were treated in a sanatorium with pathology of the musculoskeletal system. 10 healthy adolescents 13-14 years old made up the control group (K1) and 10 healthy adolescents 15-17 years old made up the control group (K2). Criteria for inclusion in the study: age - 13-17, painful periods.

Criteria for not inclusion in the study: age under 13 and over 17, endometriosis, ovarian cysts, obesity.

The history data were studied in all groups, a standard general clinical and special gynecological

examination, a clinical and laboratory examination were carried out.

To determine the level of gonadotropic and sex steroid hormones (follicle-stimulating (FSH), luteinizing (LH), prolactin (PRL), estradiol (E2), progesterone (P), testosterone (T)) in the blood serum, the enzyme immunoassay was performed using the "Hema-Medica" diagnostic system (Moscow). To interpret the results, the obtained data were compared with the indices of the control group; reference values for these reagents were also used.

In order to exclude the organic and anatomical pathology of the internal female genital organs, an ultrasound examination of the pelvic organs was performed using transabdominal ultrasound imaging with a sufficiently full bladder in real time according to the standard method, with a 3.5 MHz sensor on a Lagic 100MP apparatus.

Statistical processing of the research results was carried out using generally accepted methods of variational-statistical analysis with calculation of the average value (M) and the arithmetic mean error (m) using the standard Microsoft Excel and Statistica V.6.0 software package. To assess the statistical significance of differences in average values, the Wilcoxon-Mann-Whitney test (p) was used; the differences in average values were considered statistically significant at $p < 0.05$.

RESULTS AND ITS DISCUSSION:

When conducting a general clinical examination in the age group of 13-14 year olds, 2 adolescents (11.1%) showed dysmenorrhea with a headache, 1 (5.5%) revealed mood disorders, nausea, and vomiting was observed in 2 (11.1%). Of particular note is the severity of the pain syndrome, so 10 (55.5%) of the subjects noted its presence. A combination of symptoms was observed only in 3 (16.6%) adolescents, with the goal of anesthesia, 9 (50.0%) took medication.

Table 1 Clinical characteristics of the course of dysmenorrhea in adolescents 13-14 years old (n = 18)

Pain syndrome	Headache	Vegetate symptoms (vomiting, nausea)	Mood change	Combination of symptoms	Taking medication	The total number of subjects
10	2	2	1	3	9	18 (n)
55,5%	11,1%	11,1%	5,5%	16,6%	50,0%	100 %

In the second age group, there is an aggravation of the symptoms of dysmenorrhea. Almost 100% of adolescents report severe pain. Almost all 12 (92.3) take medication. Already 11 (84.6%) have a combination of symptoms. Vegetative changes, mood deterioration, headache during menstruation, appear in the vast majority of adolescents of 15-17 years old (table 2).

Table 2 Clinical characteristics of the course of dysmenorrhea in adolescents aged 15-17 (n = 13)

Pain syndrome	Headache	Vegetate symptoms (vomiting, nausea)	Mood change	Combination of symptoms	Taking medication	The total number of subjects
13	7	8	9	11	12	13 (n)
100%	53,8%	61,5%	69,2%	84,6%	92,3%	100 %

As can be seen from tables 3.4 in the first age group, a significant decrease in testosterone levels by 0.27 ± 0.02 nmol / L compared with the control group, by 0.30 ± 0.02 nmol / L in the second group is noted. Cortisol levels are within the age norm in both groups. In adolescents of group II, the level of FSH was 4.08 ± 0.42 Honey / l, which is significantly lower than in healthy peers (5.31 ± 0.76 Honey / l), in group I, the content of FSH is within the age norm. LH concentration in both age groups is lower compared to the control group and is at the lower boundary of the age norm. The mismatch in the production of gonadotropic

hormones led to a decrease in the LH / FSH index. Prolactin levels are within (p <0.05). The concentration of estradiol in the blood serum of adolescents of 13-14 years old is significantly lower by 0.14 ± 0.004 nmol / L compared with the control group. In adolescents aged 15-17, estradiol is reduced by 0.17 ± 0.004 nmol / L. In the first age group, the concentration of progesterone in the first phase is 2.7 times lower, in the second phase of the cycle it was 0.30 ± 0.02 nmol / L, which is 11.0 times lower compared to healthy peers (p <0.05). In adolescents aged 15-17, the level of progesterone is 2.7 lower in the first phase and 11.6 in the second.

Table 3 Level of blood hormone in adolescents of 13-14 y.o. with dysmenorrhea (M ± m)

Indicators	Group of children examined (n = 18)	Control (n = 10)
FSH (UA / L)	3,92±0,41	4,04±0,21
LH (UA / L)	2,02±0,09**	3,16±0,26
LH / FSH	0,51±0,02**	0,78±0,05
Prolactin, (mIU / L)	230,0±60,5	212,7±51,0
Estradiol (nmol / l)	0,094±0,008**	0,234±0,012
Progesterone, I phase (nmol / l)	0,17±0,01**	0,466±0,024
Progesterone, II phase (nmol / l)	0,27±0,02**	3,15±0,16
Testosterone, (nmol / l)	0,56±0,14*	0,83±0,12
Cortisol (nmol / l)	338,5±5,9	341,0±5,0

Note: * - p<0,05; ** - p<0,01.

Table 4 Level of blood hormone in adolescents of 15-17 y.o. with dysmenorrhea (M ± m)

Indicators	Group of children examined (n=13)	Control (n=10)
FSH (UA / L)	4,08±0,42*	5,31±0,76
LH (UA/ L)	2,28±0,23**	3,79±0,43
LH / FSH	0,55±0,01**	0,71±0,05
Prolactin, (mIU / L)	285,4±21,5*	339,0±15,2
Estradiol (nmol / l)	0,093±0,009**	0,27±0,013
Progesterone, I phase (nmol / l)	0,180±0,009**	0,640±0,070
Progesterone, II phase (nmol / l)	0,29±0,02**	3,43±0,10
Testosterone, (nmol / l)	0,78±0,11*	1,08±0,13
Cortisol (nmol / l)	338,8±5,0	340,9±5,9

Note: * - $p < 0,05$; ** - $p < 0,01$.

CONCLUSION:

Thus, in adolescents with dysmenorrhea, the level of steroid hormones (estradiol, progesterone, testosterone) is low, while the level of gonadotropic hormones is much lower in the second age group, with unchanged indicators of cortisol and prolactin. In the absence of timely treatment, the course of dysmenorrhea is aggravated, severe combined forms develop.

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