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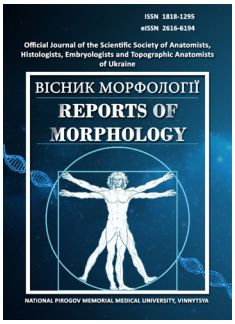

Discriminant models of the possibility of genital endometriosis in Ukrainian young women depending on the features of the structure and body size

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Endometriosis is one of the most common gynecological pathologies, which can significantly affect the reproductive health of women, including young women. Research into factors that may contribute to its development is important for early identification of risk groups and development of preventive measures. Among the possible predictors, anthropometric characteristics that may reflect the endocrine and metabolic characteristics of the body attract attention. The study of these parameters allows us to assess the potential relationship between somatotype and the likelihood of developing the disease, which may contribute to a personalized approach to prevention. The aim of the study is to construct and analyze discriminant models of the possibility of genital endometriosis in Ukrainian young women without and with somatotype, depending on the features of the structure and body size. Clinical, laboratory and anthropo-somatotypological examination were performed on 89 Ukrainian young women (aged 16 to 18 years) with genital endometriosis. Primary anthropo-somatotypological indicators of 78 practically healthy Ukrainian young women of the same age group were taken from the data bank of the National Pirogov Memorial Medical University, Vinnytsya, Ukraine. Discriminant models of the possibility of the occurrence and features of the course of genital endometriosis, depending on the features of the structure and body size, were constructed in the "Statistica 6.0" license package. It was established that when dividing Ukrainian young women into practically healthy and patients with genital endometriosis both without taking into account the somatotype and in representatives of mesomorphic, ectomorphic and ecto-mesomorphic somatotypes, reliable ($p<0.001$ in all cases) highly informative (correctness of entry into the models of anthropo-somatotypological indicators is from 98.6 % to 100 % of cases; Wilks' Lambda statistics is from 0.084 to 0.039) discriminant models of the possibility of the occurrence of this disease depending on the features of the body structure and body dimensions. The most common components of the constructed models include: in the group without taking into account the somatotype - girth dimensions of the body and trunk diameters of 33.33 % each; in mesomorphs - girth dimensions of the body 42.86 % and trunk diameters 28.57 %; in ectomorphs – girth dimensions of the body 50.00 %, trunk diameters and width of the distal epiphyses of the long tubular bones of the limbs 25.00 % each; in ecto-mesomorphs – girth dimensions of the body in 100 % of cases.

Key words: *obstetrics and gynecology, genital endometriosis, anthropometry, somatotype, Ukrainian young women, discriminant analysis.*

Introduction

Endometriosis is a chronic hormone-dependent disease characterized by the presence of endometriotic tissue outside the uterine cavity. It is one of the leading causes of chronic pelvic pain and female infertility. Although the disease has been studied for over a century, its etiology and pathogenesis are still the subject of scientific debate.

The main hypotheses for the occurrence of endometriosis are retrograde menstruation, metaplastic theory, genetic predisposition and impaired immune regulation [9, 13, 23].

According to epidemiological studies, the prevalence of endometriosis in women of reproductive age varies from 6 % to 10 %, although among patients with infertility or chronic pelvic pain this figure can reach 50 % [7, 21]. A study conducted in France found that the incidence of hospitalizations for endometriosis is 1.3 cases per 1000 women annually [27]. In Spain, the prevalence of this disease among women aged 15-49 years reached 1.5 % in the general population [3]. Similar data were obtained in studies in Brazil, where the incidence of endometriosis among patients with gynecological complaints was 9.8 % [7]. In the USA, the incidence of diagnosed endometriosis reaches 11.2 %, but the real incidence may be much higher due to the difficulty of diagnosis [23]. A large study conducted on the basis of health insurance companies in Israel showed that the overall prevalence of endometriosis in the country is about 10.8 % among women of reproductive age [11]. In addition, analysis of data from systematic reviews suggests that different forms of endometriosis (subtle, typical, deep) have distinct pathogenetic features and a frequency of detection that varies from 20 % to 40 % in different populations [17].

In addition to reproductive complications, endometriosis has a significant impact on women's quality of life. It is accompanied by chronic pain, dyspareunia, dysuria and other symptoms that can significantly worsen the psycho-emotional state. Studies have shown that women with endometriosis are 2-3 times more likely to suffer from depressive and anxiety disorders, and are also at increased risk of developing eating disorders [16]. An assessment of the economic burden of this disease indicates significant costs for medical care and reduced work productivity. In European countries, direct costs for the treatment of endometriosis exceed 10 billion euros each year, and indirect losses associated with temporary disability are even higher [10].

Given the widespread and multifactorial nature of endometriosis, research into possible predictors of its development is an important area of modern science. Structural features of the body, such as body mass index, anthropometric indicators and features of fat metabolism, can have a significant impact on the likelihood of developing this pathology. Identifying discriminative models that allow predicting the risk of endometriosis can contribute to the development of effective preventive measures and timely diagnosis of this pathology.

The purpose of the study – construction and analysis of discriminant models of the possibility of genital endometriosis in Ukrainian young women depending on the characteristics of the structure and size of the body.

Materials and methods

At the Department of Obstetrics and Gynecology of the National Pirogov Memorial Medical University, Vinnytsya, Ukraine, a clinical, laboratory and anthropological examination of 89 Ukrainian young women (YW) (aged 16 to 18 years) with genital endometriosis was conducted. Committee on Bioethics of National Pirogov Memorial Medical University, Vinnytsya (protocol № 11 from 3.12.2020) found that the studies do not contradict the basic bioethical standards of the Declaration of Helsinki, the Council of Europe Convention on Human Rights and Biomedicine (1977), the relevant WHO regulations and laws of Ukraine.

The diagnosis of genital endometriosis was made according to the updated guidelines of the European Society of Human Reproduction and Embryology (ESHRE) on the management of women with endometriosis [6].

The anthropological examination was performed according to the schemes of Bunak V. V. modified by Shaparenko P. P. [24], somatotypological – according to the Heath-Carter method [8], determination of indicators of the component composition of body mass – according to the formulas of Matiegka J. [18] and the muscle component of body mass according to the formulas of the American Institute of Nutrition [25]. The following distribution of YW patients by somatotype was established: endomorphs – 1; mesomorphs – 45; ectomorphs – 23; ecto-mesomorphs – 12; endo-mesomorphs – 2; average intermediate somatotype – 6. Therefore, further modeling of the possibility of genital endometriosis depending on the features of the structure and size of the body was carried out in groups without taking into account the somatotype, in mesomorphs, in ectomorphs and ecto-mesomorphs.

As a control group, the primary anthropo-somatotypological indicators of 78 practically healthy Ukrainian YW of a similar age group were taken from the data bank of the National Pirogov Memorial Medical University, Vinnytsya, Ukraine.

Discriminant models of the possibility of occurrence and features of the course of genital endometriosis depending on the features of the structure and size of the body were built in the licensed package "Statistica 6.0".

Results

When taking into account anthropometric and somatotypological indicators in *practically healthy and genital endometriosis Ukrainian YW patients without taking into account somatotype*, the discriminant function covers 100 % of practically healthy and 98.9 % of genital endometriosis patients. In general, the model that takes into account indicators of body structure and size in practically healthy and genital endometriosis patients of YW without taking into account somatotype is correct in 99.4 % of cases. The following discriminant variables were established between practically healthy and patients with genital endometriosis Ukrainian YW without taking into account somatotype (Table 1): anteroposterior mid-thoracic diameter (SGK), shoulder girth in a tense state (OBP), shoulder girth in a relaxed state (OBPL), transverse mid-thoracic diameter (PSG), body mass index (IMT), hip girth (OBB), width of the distal epiphysis of the forearm (EPPR), transverse lower thoracic diameter (PNG) and endomorphic component of the somatotype (FX).

The greatest contribution to discrimination (respectively, the smallest values of Partial Lambda) is made by shoulder girths in tense and relaxed states (see Table 1). The set of all anthropometric and somatotypological variables has a very pronounced (Wilks' Lambda statistic=0.076; p<0.001) discrimination between practically healthy and patients with genital endometriosis Ukrainian YW without taking into account somatotype (see Table 1).

Table 1. Report of a step-by-step discriminant analysis of practically healthy and patients with genital endometriosis YW without taking into account somatotype depending on the characteristics of body structure and size.

Discriminant Function Analysis Summary (boyko.sta)						
Step 9, N of vars in model: 9; Grouping: GRUP (2 grps)						
Wilks' Lambda: 0.076 approx. F(9.16)=212.6 p<0.0000						
	Wilks' Lambda	Partial Lambda	F-remove - 1.16	p-level	Toler.	1-Toler. (R-Sqr.)
SGK	0.090	0.843	29.30	0.0000	0.471	0.529
OBP	0.164	0.461	183.4	0.0000	0.091	0.909
OBPL	0.128	0.594	107.3	0.0000	0.090	0.910
PSG	0.094	0.807	37.45	0.0000	0.183	0.817
IMT	0.093	0.814	35.80	0.0000	0.333	0.667
OBB	0.090	0.847	28.33	0.0000	0.408	0.592
EPPR	0.081	0.938	10.32	0.0016	0.799	0.201
PNG	0.078	0.970	4.811	0.0297	0.172	0.828
FX	0.078	0.974	4.188	0.0424	0.751	0.249

Notes: in this and subsequent similar tables, Wilks' Lambda – Wilks' Lambda statistic; Partial Lambda – Wilks' Lambda statistic of the single contribution of the variable to the discrimination between populations; F-remove – standard F-criterion associated with the corresponding Partial Lambda; p-level – p-level associated with the corresponding F-remove; Toler. – tolerance (measure of redundancy of the feature); 1-Toler. (R-Sqr.) – coefficient of multiple correlation of the feature with all other features (the indicator is necessary for calculating tolerance).

To determine the classification indicators (Df), which allow to attribute the obtained anthropometric and somatotypological indicators to "typical" for practically healthy or patients with genital endometriosis Ukrainian YW without taking into account the somatotype, the coefficients of the classification discriminant functions for each feature were established. Below are the equations, where the assignment to practically healthy Ukrainian YW without taking into account the somatotype is possible at a Df value close to 159.4; and to patients with genital endometriosis of Ukrainian YW without taking into account the somatotype – at a Df value close to 150.1:

Df (*for practically healthy YW without taking into account somatotype*) = SGK×1.168 + OBP×7.970 - OBPL×7.197 + PSG×2.996 - IMT×2.609 + OBB×3.893 + EPPR×12.62 - PNG×0.291 - FX×3.115 - 159.4;

Df (*for patients with genital endometriosis YW without taking into account somatotype*) = SGK×3.763 + OBP×0.777 - OBPL×0.856 + PSG×0.329 - IMT×0.729 + OBB×2.700 + EPPR×17.06 + PNG×0.947 - FX×4.789 - 150.1;

where (here and hereinafter), trunk diameters – in cm; body circumferences – in cm; somatotype components – in points; body mass index – in kg/m^2; width of distal epiphyses of long tubular bones of limbs – in cm; somatotype components – in points.

Calculated criterion χ^2 (=414.0) confirms the statistical significance of the obtained discriminant functions in girls without taking into account somatotype.

When taking into account anthropometric and somatotypological indicators in *practically healthy and patients with genital endometriosis Ukrainian YW with a mesomorphic somatotype*, the discriminant function covers 100% of practically healthy and 97.8 % of patients with genital endometriosis YW. In general, the model that takes into account indicators of body structure and size in practically healthy and patients with genital endometriosis YW with a mesomorphic somatotype is correct in 98.6 % of cases. The following discriminant variables were established between practically healthy and patients with genital endometriosis in Ukrainian YW with a mesomorphic somatotype (Table 2): anteroposterior mid-thoracic diameter (SGK), shoulder girth in a tense state (OBP), shoulder girth in a non-stressed state (OBPL), body mass index (IMT), transverse mid-thoracic diameter (PSG), hip girth (OBB) and width of the distal epiphysis of the forearm (EPPR). The greatest contribution to discrimination (respectively, the smallest values of Partial Lambda) has shoulder girth in a tense state (see Table 2). The set of all anthropometric and somatotypological variables has a very pronounced (Wilks' Lambda statistic=0.084; p<0.001) discrimination between practically healthy and patients with genital endometriosis in Ukrainian YW with a mesomorphic somatotype (see Table 2).

Table 2. Report of a step-by-step discriminant analysis of practically healthy and patients with genital endometriosis YW of the mesomorphic somatotype depending on the characteristics of the body structure and dimensions.

Discriminant Function Analysis Summary (boyko.sta)						
Step 7, N of vars in model: 7; Grouping: GRUP (2 grps)						
Wilks' Lambda: 0.084 approx. F(7.65)=101.7 p<0.0000						
	Wilks' Lambda	Partial Lambda	F-remove -1.65	p-level	Toler.	1-Toler. (R-Sqr.)
SGK	0.098	0.855	11.02	0.0015	0.556	0.444
OBP	0.213	0.393	100.3	0.0000	0.152	0.848
OBPL	0.153	0.548	53.58	0.0000	0.152	0.848
IMT	0.113	0.742	22.63	0.0000	0.583	0.417
PSG	0.103	0.812	15.05	0.0002	0.501	0.499
OBB	0.103	0.816	14.63	0.0003	0.609	0.391
EPPR	0.093	0.896	7.507	0.0079	0.782	0.218

Below, in the form of equations, the definition of the Df indicator is given, where the classification of Ukrainian YW with a mesomorphic somatotype as practically healthy is possible with a Df value close to 211.2; and Ukrainian YW with a mesomorphic somatotype as patients with genital endometriosis is possible with a Df value close to 194.4:

Df (*for practically healthy YW with a mesomorphic somatotype*) = SGK×1.559 + OBP×9.881 - OBPL×6.869

- IMT×0.215 + PSG×2.190 + OBB×4.063 + EPPR×7.453 - 211.2;

Df (*for patients with genital endometriosis YW with a mesomorphic somatotype*) = SGK×3.699 + OBP×2.487 - OBPL×1.027 + IMT×1.918 + PSG×0.777 + OBB×2.814 + EPPR×13.40 - 194.4;

Calculated criterion χ^2 (=167.4) confirms the statistical significance of the obtained discriminant functions in YW with a mesomorphic somatotype.

Taking into account anthropometric and somatotypological indicators in *practically healthy and genital endometriosis patients Ukrainian YW with ectomorphic somatotype*, the discriminant function covers 100 % of practically healthy and 100% of genital endometriosis patients of YW. The following discriminant variables were established between practically healthy and genital endometriosis patients of Ukrainian girls with ectomorphic somatotype (Table 3): anteroposterior mid-thoracic diameter (SGK), shoulder girth in a tense state (OBP), shoulder girth in a non-stressed state (OBPL), transverse mid-thoracic diameter (PSG), hip girth (OBB), upper forearm girth (OBPR), width of the distal epiphysis of the forearm (EPPR), width of the distal epiphysis of the shoulder (EPPL). The greatest contribution to discrimination (respectively, the smallest values of Partial Lambda) is made by the anterior-posterior mid-thoracic diameter and the transverse mid-thoracic diameter (see Table 3). The combination of all anthropometric and somatotypological variables has a very pronounced (Wilks' Lambda statistic=0.060; p<0.001) discrimination between practically healthy and patients with genital endometriosis Ukrainian YW with an ectomorphic somatotype (see Table 3).

Table 3. Report of a step-by-step discriminant analysis of practically healthy and patients with genital endometriosis YW of the ectomorphic somatotype depending on the characteristics of the body structure and dimensions.

Discriminant Function Analysis Summary (boyko.sta)						
Step 10, N of vars in model: 8; Grouping: GRUP (2 grps)						
Wilks' Lambda: 0.060 approx. F(8.34)=66.33 p<0.0000						
	Wilks' Lambda	Partial Lambda	F-remove -1,34	p-level	Toler.	1-Toler. (R-Sqr.)
SGK	0.129	0.466	39.02	0.0000	0.230	0.770
OBP	0.089	0.679	16.11	0.0003	0.148	0.852
OBPL	0.087	0.695	14.91	0.0005	0.212	0.788
PSG	0.115	0.525	30.72	0.0000	0.308	0.692
OBB	0.080	0.751	11.30	0.0019	0.444	0.556
OBPR	0.071	0.849	6.025	0.0194	0.286	0.714
EPPR	0.077	0.777	9.739	0.0037	0.399	0.601
EPPL	0.070	0.856	5.730	0.0223	0.403	0.597

Below, in the form of equations, the definition of the Df indicator is given, where the classification of Ukrainian YW with an ectomorphic somatotype as practically healthy is possible with a Df value close to 269.8; and Ukrainian YW with an ectomorphic somatotype as patients with genital endometriosis is possible with a Df value close to 313.6:

Df (*for practically healthy YW with an ectomorphic somatotype*) = SGK×7.845 - OBP×2.901 - OBPL×2.515 - PSG×0.050 + OBB×1.076 + OBPR×17.24 + EPPR×21.48 + EPPL×3.647 - 269.8;

Df (*for patients with genital endometriosis YW with ectomorphic somatotype*) = SGK×16.66 - OBP×10.80 + OBPL×3.980 - PSG×4.236 - OBB×0.754 + OBPR×21.90 + EPPR×35.45 - EPPL×7.366 - 313.6;

Calculated criterion χ^2 (=104.0) confirms the statistical significance of the obtained discriminant functions in YW with an ectomorphic somatotype.

Taking into account anthropometric and somatotypological indicators in *practically healthy and patients with genital endometriosis Ukrainian YW with ecto-mesomorphic somatotype*, the discriminant function covers 100% of practically healthy and 100 % of patients with genital endometriosis YW. The following discriminant variables between practically healthy and patients with genital endometriosis Ukrainian YW with ecto-mesomorphic somatotype were established (Table 4): hip circumference (OBB), shoulder circumference in a tense state (OBP), shoulder circumference in a relaxed state (OBPL), chest circumference on exhalation (OBGKH), chest circumference on inhalation (OBGKV). The greatest contribution to discrimination (respectively, the smallest values of Partial Lambda) is made by shoulder circumferences in tense and relaxed states (see Table 4). The set of all anthropometric and somatotypological variables has a very pronounced (Wilks' Lambda statistic=0.039; p<0.001) discrimination between practically healthy and patients with genital endometriosis Ukrainian YW with ecto-mesomorphic somatotype (see Table 4).

Table 4. Report of a step-by-step discriminant analysis of practically healthy and patients with genital endometriosis YW of the ecto-mesomorphic somatotype depending on the characteristics of the body structure and dimensions.

Discriminant Function Analysis Summary (boyko.sta)						
Step 7, N of vars in model: 5; Grouping: GRUP (2 grps)						
Wilks' Lambda: 0.039 approx. F(5.20)=97.32 p<0.0000						
	Wilks' Lambda	Partial Lambda	F-remove 1.20	p-level	Toler.	1-Toler. (R-Sqr.)
OBB	0.058	0.681	9.375	0.0062	0.690	0.310
OBP	0.189	0.208	75.96	0.0000	0.127	0.873
OBPL	0.180	0.219	71.44	0.0000	0.095	0.905
OBGKH	0.059	0.668	9.946	0.0050	0.058	0.942
OBGKV	0.050	0.783	5.530	0.0291	0.064	0.936

Below, in the form of equations, the definition of the Df indicator is given, where the classification of Ukrainian YW with an ecto-mesomorphic somatotype as practically healthy is possible with a Df value close to 365.5; and Ukrainian YW with an ecto-mesomorphic somatotype as patients with genital endometriosis is possible with a Df value close to 282.7:

Df (*for practically healthy YW with ecto-mesomorphic somatotype*) = OBB×10.84 + OBP×6.068 - OBPL×7.861 + OBGKH×4.800 - OBGKV×2.115 - 365.5;

Df (*for patients with genital endometriosis YW with ecto-mesomorphic somatotype*) = OBB×7.809 - OBP×6.354 + OBPL×10.61 + OBGKH×0.652 + OBGKV×0.525 - 282.7;

Calculated criterion χ^2 (=69.49) confirms the statistical significance of the obtained discriminant functions in YW with an ecto-mesomorphic somatotype.

Discussion

Thus, when dividing Ukrainian YW into practically healthy and patients with genital endometriosis without taking into account the somatotype, a reliable ($p<0.001$) pronounced discrimination (Wilks' Lambda=0.076) of the obtained classification indicators was established (the correctness of entering the models of anthropo-somatotypological indicators is 99.4 % of cases). The models include trunk diameters (33.33 %), body circumference dimensions (33.33 %), body mass index (11.11 %), the width of the distal epiphyses of the long tubular bones of the limbs (11.11 %) and somatotype components (11.11 %). The greatest contribution to the discrimination between practically healthy and patients with genital endometriosis YW without taking into account the somatotype is shoulder circumferences in tense and unstressed states.

When dividing Ukrainian YW into practically healthy and patients with genital endometriosis of the mesomorphic somatotype, a significant ($p<0.001$) pronounced discrimination (Wilks' Lambda=0.084) of the obtained classification indicators was established (the correctness of the entry into the models of anthropo-somatotypological indicators is 98.6 % of cases). The models include trunk diameters (28.57 %), body circumference (42.86 %), body mass index (14.29 %) and the width of the distal epiphyses of the long tubular bones of the limbs (14.29 %). The greatest contribution to the discrimination between practically healthy and patients with genital endometriosis of YW of the mesomorphic somatotype has a shoulder girth in a tense state.

When dividing Ukrainian YW into practically healthy and patients with genital endometriosis of the ectomorphic somatotype, a significant ($p<0.001$) pronounced discrimination (Wilks' Lambda=0.060) of the obtained classification indicators was established (the correctness of the entry into the models of anthropo-somatotypological indicators is 100 % of cases). The models include trunk diameters (25.00 %), girth dimensions of the body (50.00 %) and the width of the distal epiphyses of the long tubular bones of the limbs (25.00 %). The greatest contribution to the discrimination between practically healthy and patients with genital endometriosis of YW of the ectomorphic somatotype is made by the anterior-posterior mid-thoracic diameter and the transverse mid-thoracic diameter.

When dividing Ukrainian YW into practically healthy and patients with genital endometriosis of the ecto-mesomorphic somatotype, a significant ($p<0.001$) pronounced discrimination (Wilks' Lambda=0.039) of the obtained classification indicators was established (the correctness of entering the models of anthropo-somatotypological indicators is 100 % of cases). In all cases, the models include body circumferences (100 %). The greatest contribution to the discrimination between practically healthy and patients with genital endometriosis of YW of the ecto-mesomorphic somatotype is shoulder circumferences in tense and non-tense states.

The results obtained confirm the existence of a relationship between anthropometric characteristics and the risk of developing genital endometriosis in girls. According to the conducted studies, body mass index (BMI), fat tissue distribution and overall body structure may play a key role in shaping the predisposition to this disease. Several large-scale epidemiological studies have demonstrated that an increased BMI is associated with a lower risk of developing endometriosis, which may be due to the hormonal characteristics of fat tissue and its effect on estrogen levels [4, 5, 14].

However, the data on the relationship between body weight and the risk of endometriosis are contradictory. A meta-analysis conducted by Yong L. & Weiyuan Z. [28] showed that underweight women (BMI<18.5) have a higher risk of developing endometriosis, while obese women demonstrate a lower level of this disease. Similar results were obtained in the study by Aarestrup J. et al. [1], which demonstrated that low body weight in childhood and short stature are associated with an increased risk of endometriosis in the future. This suggests that factors related to early development may influence susceptibility to this disease in adulthood.

Studies by Omiyale W. et al. [19] and Sponholtz T. R. et al. [26] demonstrated that fat distribution is more important than overall BMI in determining the risk of endometriosis and endometrial cancer. In particular, central obesity was associated with an increased risk of endometrial cancer, while peripheral fat distribution had a protective effect. This may explain the different endocrine mechanisms associated with the localization of fat tissue and its effect on circulating estrogen levels.

Another important aspect is the role of metabolic factors in the development of endometriosis. Studies by Backonja U. et al. [5] confirmed that total adipose tissue, independent of BMI, can be a predictor of risk for this disease. In addition, a review by Pantelis A. et al. [20] indicates a complex interaction between obesity, hormonal balance and the development of endometriosis.

In the study of Aune D. et al. [2], it was demonstrated that tall stature is associated with an increased risk of endometrial cancer, which may indicate similar mechanisms of hormonal influence in endometriosis. At the same time, the study of Farland L. V. et al. [12] did not find significant associations between stature and endometriosis, which indicates the need for further research in this direction.

Thus, the results obtained indicate the multifactorial nature of genital endometriosis, in the development of which

both genetic and metabolic factors play a role. Established anthropometric predictors may be useful for developing individualized approaches to early diagnosis and prevention of this disease.

Conclusions

1. Based on the characteristics of body structure and size, reliable (p<0.001 in all cases) discriminant models were developed, which allow with a high probability to predict the possibility of genital endometriosis in Ukrainian YWs without taking into account the somatotype (the classification matrix covers 99.4 % of cases, Wilks' Lambda statistics=0.076), representatives of the mesomorphic somatotype (the classification matrix covers 98.6 % of cases, Wilks' Lambda statistics=0.084), ectomorphic somatotype (the classification matrix covers 100 % of cases, Wilks' Lambda statistics=0.060) and ecto-mesomorphic somatotype (the classification matrix covers 100 % of cases, Wilks' Lambda statistics=0.039).

2. The most common components of the constructed models are trunk diameters (33.33 % in the group without taking into account somatotype; 28.57 % in mesomorphs; 25.00 % in ectomorphs), body circumferences (33.33 % in the group without taking into account somatotype; 42.86 % in mesomorphs; 50.00 % in ectomorphs; 100 % in ecto-mesomorphs) and the width of the distal epiphyses of the long tubular bones of the limbs (25.00 % in ectomorphs).

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ДИСКРИМІНАНТНІ МОДЕЛІ МОЖЛИВОСТІ ВИНИКНЕННЯ ГЕНІТАЛЬНОГО ЕНДОМЕТРІОЗУ В УКРАЇНСЬКИХ ДІВЧАТ У ЗАЛЕЖНОСТІ ВІД ОСОБЛИВОСТЕЙ БУДОВИ ТА РОЗМІРІВ ТІЛА

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Ендометріоз є однією з найпоширеніших гінекологічних патологій, що може значно впливати на репродуктивне здоров'я жінок, у тому числі й молодого віку. Дослідження факторів, які можуть сприяти його розвитку, є важливим для раннього виявлення груп ризику та розробки профілактичних заходів. Серед можливих предикторів увагу привертають антропометричні характеристики, які можуть відображати ендокринні та метаболічні особливості організму. Вивчення цих параметрів дозволяє оцінити потенційний зв'язок між соматотипом та ймовірністю розвитку захворювання, що може сприяти персоналізованому підходу до профілактики. Мета дослідження – побудова та аналіз дискримінантних моделей можливості виникнення генітального ендометріозу в українських дівчат без та з урахуванням соматотипу у залежності від особливостей будови та розмірів тіла. У 89 українських дівчат (віком від 16 до 18 років), хворих на генітальний ендометріоз, проведено клініко-лабораторне та антропо-соматотипологічне обстеження. Первинні антропо-соматотипологічні показники 78 практично здорових українських дівчат аналогічної вікової групи отримані з банку даних науково-дослідного центру Вінницького національного медичного університету ім. М. І. Пирогова. Дискримінантні моделі можливості виникнення та особливостей перебігу генітального ендометріозу в залежності від особливостей будови та розмірів тіла побудовані в ліцензійному пакеті «Statistica 6.0». При розподілі українських дівчат на практично здорових та хворих на генітальний ендометріоз як без урахування соматотипу, так і у представниць мезоморфного, ектоморфного та екто-мезоморфного соматотипів побудовані достовірні (p<0,001 в усіх випадках) високоінформативні (коректність входження до моделей антропо-соматотипологічних показників складає від 98,6 % до 100 % випадків; статистика Wilks' Lambda дорівнює від 0,084 до 0,039) дискримінантні моделі можливості виникнення даного захворювання в залежності від особливостей показників будови та розмірів тіла. Найбільш часто до складу побудованих моделей входять: в групі без урахування соматотипу – обхватні розміри тіла та діаметри тулуба (по 33,33 %); у мезоморфів – обхватні розміри тіла (42,86 %) та діаметри тулуба (28,57 %); у ектоморфів – обхватні розміри тіла (50,00 %), діаметри тулуба та ширина дистальних епіфізів довгих трубчастих кісток кінцівок по (25,00 %); у ектомезоморфів – обхватні розміри тіла (в 100 % випадків).

Ключові слова: *акушерство та гінекологія, генітальний ендометріоз, антропометрія, соматотип, українські дівчата, дискримінантний аналіз.*

Author's contribution

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