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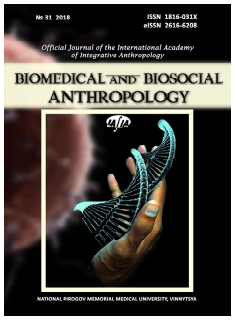

Dermatoglyphic pattern in the men with essential hypertension, who are carriers of the polymorphic genes of angiotensin II type 1 receptors

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Essential hypertension and its common complication - chronic heart failure, is one of the most significant medical, economic and social problems in the XXI century. At the same time, this pathology is 30-40% genetically predisposed. One of significant pathogenic factors is the inheritance of definite variants of genes, coding the receptors to angiotensin II type 1. For this reason, the effective and inexpensive researches for screening of the mentioned genetic phenomenon are being carried out. Objective: to improve the screening diagnostic methods for carriers of polymorphic genes of angiotensin II type 1 receptors with essential hypertension and essential hypertension complicated by chronic heart failure. There were studied dermatoglyphic prints of men 40-60 years, who are carriers of polymorphic gene variants of angiotensin II type 1 receptor with no cardiovascular diseases (n=79), male patients with essential hypertension and hypertrophy of the myocardium (stage II), II-III stages (n=62) and essential hypertension (n=50) complicated by chronic heart failure, residents of Podillya region of Ukraine. Genotyping of the gene of angiotensin II type 1 receptor was performed using polymerase chain reaction. All patients included in the control group and those with essential hypertension underwent dermatoglyphic examination of fingers on both hands using modern portable rolling scanner Futronic FS50 (Korea). Interpretation and decoding of dermatoglyphic prints was conducted by T. D. Gladkova's method. Statistical analysis was done on personal computer using standard statistical package "STATISTICA 10.0". The found ulnar loop was dominant dermatoglyphic print regardless of the presence or absence of essential hypertension and chronic heart failure in 40-60 year old men. Besides, positive correlation relationship was revealed between the inheritance gene of angiotensin II type 1 receptors and fingerprint patterns: the third finger on the left hand in males with no cardiovascular pathology (weak strength) and the second finger on the right hand in patients with essential hypertension (medium strength). In individuals with no cardiovascular diseases, carriers of genotype A1166A, prevalence of ulnar loop on the third finger of left hand is higher than in carriers of C allele gene of angiotensin II type 1 receptors. In males with essential hypertension, carriers of C allele, degree of incidence of the whorl on the second finger of right hand is significantly higher than in carriers of genotype A1166A, offering the possibility to determine the carriership of a particular gene of angiotensin II type 1 receptors. Carrying out dermatoglyphic examination in patients with an increase in blood pressure and determining the variant of carrier of the gene of the receptor to angiotensin II type 1 will make it possible to facilitate the selection of those individuals who in the future need to spend all the necessary amount of research to confirm the diagnosis of essential hypertension and the possible development of complications of the course of this cardiovascular disease.

Keywords: *dermatoglyphic fingerprints, polymorphism of angiotensin II type 1 receptor gene, essential hypertension.*

Introduction

Essential hypertension (EH) and chronic heart failure (CHF), its most common complication, takes one of the leading positions in the structure of morbidity and mortality not only in Ukraine but in the whole world. Now there are

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about 1 billion patients with EH in the world, and the incidence of disease is expected to increase to 1.5 billion in 2025. More than 10 million people died in 2015 from diseases associated with high blood pressure [21]. In 2016, 41.2% of adult population of Ukraine was ill with EH [12].

EH is generally acknowledged to be a genetic disease [6, 15, 20]. This is the basis for the search of simple, fast and non-expensive surveys for screening of relevant genetic predisposition, and planning primary preventive measures. Study of dermatoglyphic indicators can be helpful in this relation.

At the beginning of the 10th week of embryogenesis, along with the skin patterns, cardiovascular and nervous system are formed, as well as microvasculature, hence finger patterns are closely connected with the latter [9, 13].

In addition, in many studies dermatoglyphics were shown to serve as a screening method to establish the variant of carriership of genotypes of different genes [3, 4, 19, 22].

To determine the character of dermatoglyphic changes associated with EH, study was conducted among the natives of state Rivers, Nigeria. Investigators have shown that the percentage frequency of the whorls in male and female groups with EH was higher than in virtually healthy representatives of both sexes. In patients with EH, whorls were defined in 67.0%, and ulnar loops - in 28.0%. Whorls on the thumb of the right hand were closely associated with EH in females and males (80.8% and 100%, respectively) [11].

Dermatoglyphics were also studied among the population of South-Western India. The ridge count on I and IV fingers of the right hand was found to be significantly higher in patients of both sexes with EH, than in those included in the control group. But in males with EH, whorls, arches and loops on I and IV fingers of the right hand occurred significantly more often than in virtually healthy individuals. Ridge count on I, III and V fingers of the right hand appeared to be significantly higher than in males of the control group [4, 14].

One of the factors that may contribute to the formation of genetic basis for the development of EH is polymorphism of angiotensin II type 1 receptor gene. In the studies carried out at the Department of Internal Medicine (medical faculty №2) of Vinnytsia National Pirogov Memorial Medical University, the relationship between combinations of finger patterns and variants of genotype of angiotensin II type 1 receptor gene was established among patients with ischemic heart disease and EH [8, 10, 15, 18]. Currently characteristic features of dermatoglyphic fingerprints in individuals with no cardiovascular pathology, residents of Podillya region, have already been known. Occurrence of ulnar loops and arches predominated in finger patterns on the right and left hands, although there were differences in occurrence of such finger patterns as ulnar loops and whorls between the two hands [5, 15, 18].

The presence of relevant associations - dermatoglyphs-structure of AT1R gene - can simplify the selection of individuals who require more detailed genetic screening to determine possible phenotype of essential hypertension. That can be helpful in planning both primary and secondary prevention measures.

Aim of work - to improve the screening diagnostic methods for carriers of polymorphic genes of angiotensin II type 1 receptors with EH and EH complicated by CHF.

Materials and methods

The following males - residents of Podillya region were studied: 79 men aged 40-60, average age 57.06 ± 0.50 years, with no signs of cardiovascular disease, 62 men, average age 49.19 ± 0.66 years, with stage II hypertensive disease and 50 men, average age 50.14 ± 0.99 years, with EH complicated by CHF. During enrollment of males in the groups of patients with stage II EH and EH complicated by CHF, the following factors were considered: verified diagnosis of EH (with obligatory exclusion of symptomatic hypertension), the presence of left ventricular hypertrophy, confirmed by clinical and instrumental examinations. Exclusion criteria were symptomatic arterial hypertension, impaired kidney and liver function, coronary heart disease developed prior to EH, endocrine, hematological, neoplastic and autoimmune disorders, complications of EH - myocardial infarction, acute cerebrovascular accident. In study patients with EH, the diagnosis of concomitant coronary artery disease was excluded after assessment of pre-test probability of the disease on the basis of simple clinical indicators - complaints, anamnesis of the disease, detailed data analysis of outpatient cards of patients, results of electrocardiogram at rest and ultrasound examination of the heart at rest.

All the males were inpatients at Vinnytsia Regional Specialized Clinical Hospital of Radiation Protection of Ministry of Health of Ukraine and Military Medical Clinical Center of Central Region of Air Forces of Ukraine, and were also observed on outpatient basis from December 2013 to July 2014.

To determine alleles of polymorphic site (A1166C) of angiotensin II type 1 receptor gene, genomic DNA was isolated from venous blood leukocytes using "Set for separation of DNA/RNA from blood serum or blood plasma" (Private enterprise "Scientific Production Company "LitTech"", Russia).

Frequency distribution of polymorphic genes in the population was tested according to Hardy-Weinberg equilibrium law using GeneXpert calculator for calculation of a number of statistical parameters in case-control studies which use SNP (gen-exp.ru). ECG registration was done according to conventional method using 12 standard leads. Blood pressure was measured according to recommendations of WHO experts. Evaluation of parameters of systemic and intracardiac hemodynamics was performed using echocardiography on echogram RADMIR ULTIMARA (Kharkiv, Ukraine).

Dermatoglyphic analysis of finger prints on both hands

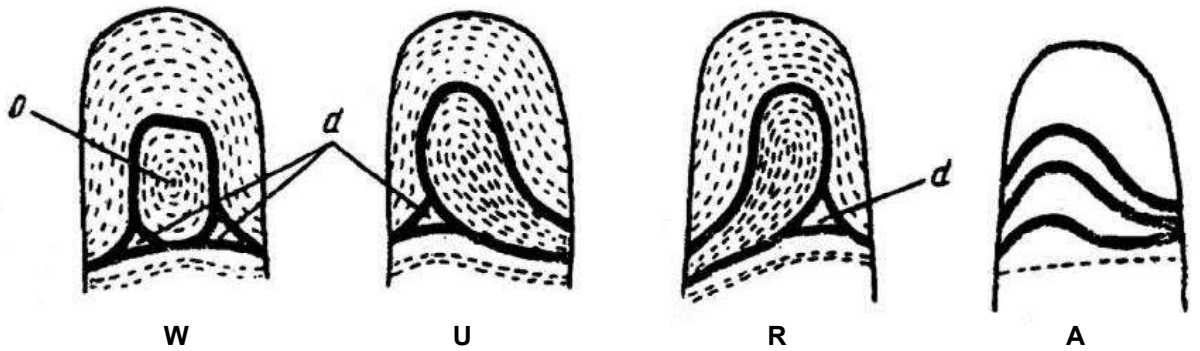

Fig. 1. Types of major finger patterns: W - the whorl, U - the ulnar loop, R - the radial loop, A - the arch, d - delta of the pattern, o - core of the pattern (adapted from T. D. Gladkova, 2002).

was carried out in all patients included in the control group and in those with EH using modern portable roll scanner Futronic FS50 (Korea). Dermatoglyphic patterns were read in rolling operation regime by means of scanner footprint - 40.64 x 38.10 mm, and high quality and accurate graphical images of all topographic zones of fingerprints were obtained. An improved optical scanner system can cover 800 x 750 pixels and 500 dots per inch of the image in 0.1 second.

There are the following descriptive terms for skin patterns located on finger-pads (Fig.1):

- Triradius or delta - a point at which three parallel groups of ridges meet.

- Ridge count - number of ridges from the center of finger pattern to triradius.

- Total finger ridge count - the sum of ridge counts on 5 fingers of one hand.

- Absolute finger ridge count - the sum of ridge counts on10 fingers.

- Types of finger patterns: the arch (A), the radial loop (R) (if the loop opens towards the thumb), the ulnar loop (U) (if the loop opens towards the little finger), and the whorl (W). The absence of triradius in the pattern corresponds to the arch, single triradius - to the loop, two triradii - to the whorl.

Interpretation and decoding of dermatoglyphic prints was conducted by T. D. Gladkova's method [5]. The pattern type - the arch (A), the whorl (W), the ulnar loop (U) and the radial loop (R) - was determined as one of quality parameters.

Quantitative dermatoglyphic signs included ridge count - the number of skin ridges of the finger from delta to the center of the pattern. The center of the finger pattern was connected with one of triradii using the ruler, a straight line was done with a pencil and number of ridges, line segments, points that touch the line, were counted. Neither the center of the pattern, nor the delta itself was included in calculation. As the arches have no triradii, the number of ridges was designated as 0. Whorl ridges were counted from the side, where most of them were located, as the center of the whorl can be displaced.

Total finger ridge count total finger ridge count is defined as the ridge count for 5 fingers of one hand, and absolute finger ridge count - the ridge count for 10 fingers of both hands. The sum of ridge account ranges from 0 to 300 and is an individual quantity indicator.

The study was performed according to the standards of proper clinical practice and the principles of Helsinki Declaration. A written informed consent was received before enrollment of participants in the study.

Mathematical processing was performed on a personal computer using standard statistical package "STATISTICA 10.0". For initial preparation of tables and intermediate calculations Microsoft Excel package was used. For quantitative indicators, the primary statistical processing included the calculation of the arithmetic mean (M), the standard deviation (m), the mean-square deviation (σ). The differences between the samples, distributed according to the law of normal distribution, were evaluated for Student's t-criterion (t) for unrelated measurements. For the samples, the distribution of which did not comply with the law of normal distribution, the differences were evaluated according to U-Mann-Whitney criteria. In order to statistically study the relationship between phenomena, the determination of the Spearman rank correlation coefficient was performed.

Results

The study of fingerprints in individuals with no cardiovascular diseases, residents of Podillya region of Ukraine found the following prevalence of different patterns in descending order by the sum of finger patterns on both hands (finger population): U > W > A > R (430; 301; 36; 23, respectively). Thus, the ulnar loop pattern proved to be the most common finger pattern type ($p<0.001$).

In male patients with EH, residents of Podillya region of Ukraine, the prevalence rate of finger patterns appeared to be the following: U > W > A > R (357; 193; 40; 30, respectively), while in those with EH and CHF - 207; 135; 23; 65, respectively. The ulnar loop was determined as dominating dermatoglyphic pattern among males with EH ($p<0.001$). In addition, the prevalence rate of ulnar loop in males with EH was significantly higher than in those with EH and CHF ($p<0.05$) (Table. 1).

By the sum of finger patterns on the right hand in

Table 1. Prevalence of idifferent finger patterns and their sum on both hands in males, residents of Podillya region of Ukraine, (%), Σ - the sum of finger patterns.

Groups	Ulnar loop pattern (U)	Whorl pattern (W)	Arch pattern (A)	Radial loop pattern (R)	p
	1	2	3	4	
1. Men with no cardio-vascular diseases (n=79)	54.4% Σ=430	38.1% Σ=301	4.5% Σ=36	3.0% Σ=23	p_{2-1}<0.0001 p^{3-1}<0.0001 p_{4-1}<0.0001 p_{3-2}<0.0001 p_{4-2}<0.0001 p_{4-3}>0.05
2. Patients with EH (n=62)	57.6% Σ=357	31.1% Σ=193	6.5% Σ=40	4.8% Σ=30	p_{2-1}<0.0001 p_{3-1}<0.0001 p_{4-1}<0.0001 p_{3-2}<0.0001 p_{4-2}<0.0001 p_{4-3}>0.05
3. Patients with EH and CHF (n=43)	48.0% Σ=207	31.0% Σ=135	5.4% Σ=23	15.6% Σ=65	p_{2-1}<0.001 p_{3-1}<0.0001 p_{4-1}<0.0001 p_{3-2}<0.01 p_{4-2}<0.01 p_{4-3}>0.05
P	p^{2-1}>0.05 p^{3-1}>0.05 p^{3-2}<0.05	p_{2-1}>0.05 p_{3-1}>0.05 p_{3-2}>0.05	p_{2-1}>0.05 p_{3-1}>0.05 p_{3-2}>0.05	p_{2-1}>0.05 p_{3-1}>0.05 p_{3-2}>0.05	

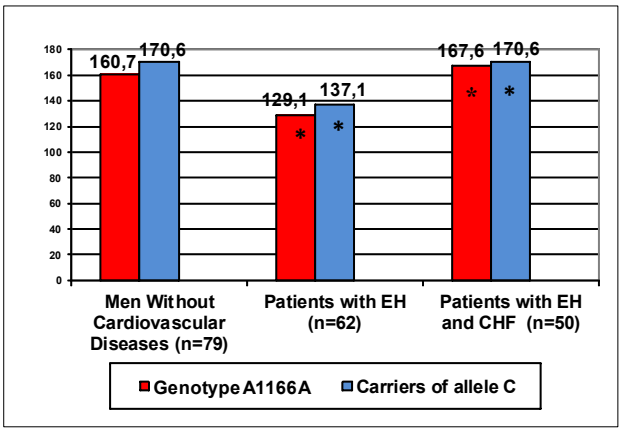

Fig. 2. Absolute finger ridge count level in males with no cardiovascular disease, patients with EH and EH complicated by CHF, residents of Podillya region of Ukraine, carriers of different genotypes of AT1R gene.

Note: * - individuals with no cardiovascular pathology within the groups carriers of C allele and genotype A1166A of AT1R gene.

individuals with no cardiovascular disease, prevalence of different patterns was the following in descending order: U > W > A > R (199; 160; 18; 18 cases, respectively), and on the left hand - U > W > A > R (231; 141; 18; 5 cases, respectively). However, prevalence of U was significantly higher on left hand than on right hand (p<0.01).

The quantitative dermatoglyphic characteristic - the level of absolute finger ridge count - was assessed, it being (162.9 ± 36.0). Total finger ridge count on right hand was (83.9 ± 2.1), on left hand - (80.5 ± 2.2) (p>0.05). The relationship between the carriership of certain genotypes of AT1R gene and dermatoglyphic indicators was studied as well. No significant difference in the levels of absolute finger ridge count in subjects with no cardiovascular diseases, carriers of different genotypes of AT1R gene, was identified (p>0.05). The males with stage II EH were found to have the following prevalence of different finger patterns on right hand: U > W > A > R (170; 110; 19; 18 cases, respectively), and on left hand - U > W > A > R (187; 83; 21; 22 cases, respectively). Besides, as opposed to individuals with no cardiovascular disease , prevalence of W was higher on right hand than on left hand (p<0.05). In patients with EH and CHF, by the sum of finger patterns, their prevalence was the following on right hand: U > W > A > R (99; 80; 34; 2 cases, respectively), and on left hand - U > W > A > R (108; 54; 31; 22 cases, respectively). Thus, only the degree of W incidence was significantly higher on right hand than on left hand (p<0.05).

The level of absolute finger ridge count in males with EH was (133.8 ± 45.5), being significantly lower than in patients with EH and CHF - (169.1 ± 46.7) (p<0.001). Total finger ridge count level on five fingers in males with EH was (69.1 ± 2.9) on right hand and (64.7 ± 3.1) on left hand (p>0.05), in patients with CHF and EH it was (88.9 ± 3.4) and (80.2 ± 4.1), respectively (p>0.05). Total finger ridge count level on both hands was found to be significantly higher in patients with EH and CHF than in those with EH (p<0.05). Studying the relationship between carriership of different genotypes of AT1R gene and quantitative dermatoglyphic parameters, no statistically significant difference in total finger ridge count levels were found in patients with EH, carriers of various genotypes of AT1R gene (p>0.05). However, the level of total finger ridge count in males with EH, carriers of both A1166A genotype and C allele, was significantly lower than in patients with EH and CHF, carriers of corresponding genotypes of AT1R gene (p<0.05) (Fig. 2).

Analyzing total finger ridge count on both hands in carriers of different genotypes of AT1R gene among males with no cardiovascular disease, patients with EH, no statistically significant difference in the levels of total finger ridge count were found between right hand and left hand in carriers of different variants of AT1R gene (p>0.05). However, total finger ridge count level on both hands in males with EH, carriers of different variants of AT1R gene was significantly lower than in patients with EH and CHF (p<0.05).

The next step of the study was to define ridge count on different fingers of the right and left hands, in carriers of different variants of AT1R gene. No significant difference between the levels of ridge count on the fingers of both hands was found in males with EH at polymorphic inheritance of AT1R gene (p>0.05).

Using the method of Spearman's rank correlation, the relationship between carriership of genotypes of AT1R gene and specific finger patterns on both hands in males with no cardiovascular disease, patients with EH and EH and CHF, residents of Podillya region of Ukraine, was evaluated. Positive correlation relationship (R=0.22, p<0.05) was established between polymorphic inheritance of AT1R gene

Table 2. Correlation of genotypes of AT1R gene and different finger patterns on right and left hands in male patients with EH, residents of Podillya region of Ukraine.

Finger patterns	Males with no cardiovascular diseases (n=79)		Patients with stage II EH (n=62)		Patients with EH and stage II CHF (n=43)	
	R	p	R	p	R	p
1d	0.088	>0.05	-0.041	>0.05	0.197	>0.05
2d	0.028	>0.05	0.337	<0.05	0.018	>0.05
3d	0.046	>0.05	0.204	>0.05	0.057	>0.05
4d	0.083	>0.05	0.093	>0.05	-0.042	>0.05
5d	0.020	>0.05	-0.033	>0.05	-0.149	>0.05
1s	0.050	>0.05	0.014	>0.05	0.186	>0.05
2s	0.143	>0.05	-0.108	>0.05	0.061	>0.05
3s	0.222	<0.05	0.101	>0.05	-0.135	>0.05
4s	0.088	>0.05	-0.030	>0.05	-0.185	>0.05
5s	0.130	>0.05	0.025	>0.05	-0.166	>0.05

Note: 1-5d - fingers of the right hand, 1-5s - fingers of the left hand, R - Spearman correlation coefficient.

Table 3. Prevalence of different pattern types on the second finger of RH in males with stage II hypertension, residents of Podillya region of Ukraine, carriers of different variants of AT1R gene, (%).

Groups	Ulnar loop pattern (U)	Whorl pattern (W)	Arch pattern (A)	Radial loop pattern (R)	p
	1	2	3	4	
1. Homozygotes A1166A (n=49)	73.5%	20.4%	6.1%		p_{2-1}<0.05 p_{3-1}<0.01 p_{3-2}<0.01
2. Carriers of C allele (n=30)	50.0%	43.3%	6.7%		p_{2-1}<0.01 p_{3-1}<0.01 p_{3-2}<0.01
3. Patients with EH, homozygotes A1166A (n=29)	10.3%	34.5%	31.0%	24.1%	p_{2-1}<0.0001 p_{3-1}>0.05 p_{4-1}>0.05 p_{3-2}>0.05 p_{4-2}>0.05 p_{4-3}>0.05
4. Patients with EH, carriers of C allele (n=33)	30.3%	45.5%	12.1%	12.1%	p_{2-1}<0.001 p_{3-1}>0.05 p_{4-1}>0.05 p_{3-2}>0.05 p_{4-2}>0.05 p_{4-3}<0.05
p	p_{2-1}>0.05 p_{3-1}>0.05 p_{3-2}<0.05 p_{4-1}<0.05 p_{4-2}>0.05 p_{4-3}<0.05	p_{4-1}<0.05 p_{4-2}>0.05 p_{4-3}<0.05	p_{3-1}<0.05 p_{3-2}<0.05 p_{4-3}>0.05	p_{4-3}>0.05	

and the pattern on the third finger of left hand in patients with no cardiovascular pathology, and on the second finger of right hand (R=0.34, p<0.05) in male patients with EH (Table 2).

The study of prevalence of specific types of patterns on the third finger (3s) of left hand in individuals with no cardiovascular disease, carriers of various genotypes of AT1R gene, demonstrated the ulnar loop pattern type to be significantly more common (p<0.01), and radial loop (R) pattern was not seen in study cohort group.

Patients with EH, carriers of different variants of AT1R genes were noted to have some specific features: those with genotype A1166A had higher prevalence of ulnar loop on the third finger of left hand than carriers of C allele of AT1R gene.

The prevalence of different pattern types on the second finger (2d) of right hand in carriers of various genotypes of AT1R gene was studied as well. Whorl pattern type proved to be the most common (p<0.001). It is noteworthy that the prevalence of whorl pattern was significantly higher in carriers of C allele than in carriers of genotype A1166A of AT1R gene (p<0.05) (Table. 3).

Discussion

Studies of dermatoglyphs as markers for cardiovascular pathology in general, and in EH, in particular, are not numerous. The study of O. F. Dzvinyatska (2000) determined whorls on the first and second fingers of the right hand to dominate among residents of Ivano-Frankivsk region, it being the informative sign of EH for males [4].

Pogorila et al. compared the frequency of papillary patterns on different fingers depending on inheritance of polymorphic variant of AT1R gene in individuals with no cardiovascular pathology, residents of Podillya region of Ukraine, and found the following: in the subgroup with genotype AA, on the I, II and III fingers of both hands ulnar loops, and on all fingers of both hands - arches, occurred more often as compared to the group with AC and CC genotypes; radial loops were noted on IV fingers of both hands, on the 1st finger of the right hand, on the V finger of the left hand, while they were absent in the group with genetic polymorphism (AC and CC genotypes). In the subgroup with AC and CC genotypes, whorls were more common on the I, IV fingers of the left hand, and radial loops - on the V finger of the right hand, as compared to the group with AA genotype [16].

The analysis of dermatoglyphic patterns in patients with ischemic heart disease, residents of Poltava, showed an increased degree of incidence of loops and/or whorls on the II and IV fingers, while in healthy individuals arches were observed more often [11].

Kharkiv male population with EH was characterized by more frequent incidence of arches on IV and V fingers of the right hand, and complicated types of patterns on III and IV fingers of the left hand, compared to males in the control group. And female patients with EH appeared to have higher frequency of arches on V finger of the right and left hands [18].

With regard to the data obtained for inhabitants of the Podillya region of Ukraine, men aged 40 to 60 years from all types of dermatological patterns are dominated by the ulnar loop. The pattern of the radial loop (R) did not occur at all in persons without cardiovascular pathology. Depending on

the inheritance of the polymorphic variant of the AT1R gene in subjects without cardiovascular pathology of the genotype A1166A, the prevalence of the ulnar loop on the third finger of the left hand is greater than that of the AT1R allele C carriers. In men with EH carriers of an allele C, the frequency of encounter curls on the second finger of the right hand is more likely than carriers of the genotype A1166A.

After analyzing the results of researches in different regions of Ukraine, it was found that for each region their peculiarities in dermatological reflections are characteristic. That is, based on the results of the study, a methodology is proposed for screening the carrying of AT1R polymorphic genes, which can be applied in any region of a country by conducting relevant studies of its inhabitants.

The study of dermatoglyphs is a promising avenue for the further research, as the prognostic indicators for the development and course of cardiovascular disease in females for the determination of sexual dimorphism.

Conclusions

1. In 40-60 year old males, residents of Podillya region of Ukraine without cardiovascular disease and with EH and CHF, it is the ulnar loop which dominates among all dermatoglyphic patterns.

2. Positive correlation relationship was established between polymorphic inheritance of AT1R gene and the pattern on the third finger of the left hand in individuals with no cardiovascular pathology (weak strength), and on the second finger of the right hand in male patients with EH (medium strength).

3. In individuals with no cardiovascular diseases, carriers of genotype A1166A, prevalence of ulnar loop on the third finger of left hand is higher than in carriers of C allele of AT1R gene. In males with EH, carriers of C allele, degree of incidence of the whorl on the second finger of right hand is significantly higher than in carriers of genotype A1166A, offering the possibility to determine the carriership of a particular AT1R gene.

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ДЕРМАТОГЛІФІЧНА КАРТИНА У ХВОРИХ НА ЕСЕНЦІАЛЬНУ ГІПЕРТЕНЗІЮ ЧОЛОВІКІВ, НОСІЇВ ПОЛІМОРФНИХ ГЕНІВ РЕЦЕПТОРУ АНГІОТЕНЗИНУ ІІ ПЕРШОГО ТИПУ

Ружанська В.О.

Есенціальна гіпертензія та її найчастіше ускладнення хронічна серцева недостатність є однією із значущих медичних, економічних та соціальних проблем XXI століття. Водночас ця патологія на 30-40% є спадково обумовленою. Одним із патогенетично-значимих чинників являється успадкування певних варіантів генів, що кодують рецептори до ангіотензину ІІ першого типу. Тому проводиться пошук простих, швидких та маловартісних обстежень для скринінгу вище зазначеного генетичного феномена. Мета дослідження - покращити скринінгову діагностику носійства окремих варіантів гену рецептору до ангіотензину ІІ першого типу у пацієнтів з есенціальною гіпертензією з неускладненим перебігом та при хронічній серцевій недостатності, що виникла на її тлі. У роботі вивчались дерматогліфічні відбитки у чоловіків 40-60 років, носіїв поліморфних варіантів гена рецептору до ангіотензину ІІ першого типу у осіб без серцево-судинної патології (n=79), хворих на есенціальну гіпертензію з гіпертрофією міокарду (ІІ стадія), ІІ-ІІІ ступеня (n=62) та з есенціальною гіпертензією (n=50), що ускладнилась хронічною серцевою недостатністю, які є мешканцями Подільського регіону України. Генотипування гена рецептору до ангіотензину ІІ першого типу проводилось за допомогою полімеразно-ланцюгової реакції. Усім пацієнтам, що увійшли до групи контролю та пацієнтам з есенціальною гіпертензією проводили дерматогліфічне обстеження пальців обох кистей за допомогою сучасного портативного прокатного сканера Futronic FS50 (Корея). Трактування і розшифровка дерматогліфічних малюнків проводилась за методикою Т. Д. Гладкової. Математичну обробку виконували на персональному комп'ютері з використанням стандартного статистичного пакету "STATISTICA 10,0". Виявлено, що у чоловіків незалежно від наявності або відсутності есенціальної гіпертензії та хронічної серцевої недостатності серед усіх дерматогліфічних візерунків домінує ульнарна петля. Встановлено позитивний зв'язок між успадкуванням гена рецептору до ангіотензину ІІ першого типу та візерунками на третьому пальці лівої кисті у осіб без серцево-судинної патології (слабкої сили) та на другому пальці правої кисті у чоловіків хворих на есенціальну гіпертензію (середньої сили). У осіб без серцево-судинної патології носіїв генотипу A1166A частота поширеності ульнарної петлі на третьому пальці лівої кисті більша, ніж у носіїв алелі C гена рецептора до ангіотензину ІІ першого типу. У чоловіків з есенціальною гіпертензією носіїв алелі C частота зустрічаємості завитка на другому пальці правої кисті вірогідно більша, ніж у носіїв генотипу A1166A гена рецептора до ангіотензину ІІ першого типу. Проведення дерматогліфічного обстеження пацієнтам з підвищенням артеріального тиску і визначення варіанта носійства гена рецептору до ангіотензину ІІ першого типу дасть можливість полегшити відбір саме тих осіб, яким в подальшому потрібно провести весь необхідний обсяг досліджень для підтвердження діагнозу есенціальної гіпертензії і можливого розвитку ускладнень перебігу даного серцево-судинного захворювання.

Ключові слова: *дерматогліфи пальців рук, поліморфізм гена рецептору ангіотензину ІІ першого типу, есенціальна гіпертензія.*

ДЕРМАТОГЛИФИЧЕСКАЯ КАРТИНА У БОЛЬНЫХ ЭССЕНЦИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ МУЖЧИН, НОСИТЕЛЕЙ ПОЛИМОРФНЫХ ГЕНОВ РЕЦЕПТОРА АНГИОТЕНЗИНА II ПЕРВОГО ТИПА

Ружанская В. А.

Эссенциальная гипертензия и её самое часто встречаемое осложнение хроническая сердечная недостаточность являются одной из значительных медицинских, экономических и социальных проблем XXI века. В тоже время эта патология на 30-40% является наследственно обусловленной. Одним из патогенетически-значимых факторов является наследование определенных вариантов генов, которые кодируют рецепторы к ангиотензину II первого типа. Поэтому проводиться поиск простых, быстрых и малостоящих обследований для скрининга выше упомянутого генетического феномена. Цель исследования - улучшить скрининговую диагностику носительства отдельных вариантов гена рецептора к ангиотензину II первого типа у пациентов с эссенциальной гипертонией и не осложненным течением, а также при хронической сердечной недостаточности, которая возникла на её фоне. В работе изучались дерматоглифические отпечатки у мужчин 40-60 лет, носителей полиморфных вариантов гена рецептора к ангиотензину II первого типа у лиц без сердечно-сосудистой патологии (n=79), у больных эссенциальной гипертензией с гипертрофией миокарда (II стадия), II-III степени (n=62) и с эссенциальной гипертензией (n=50), которая осложнилась хронической сердечной недостаточностью, которые проживают на территории Подольского региона Украины. Генотипирование гена рецептора к ангиотензину II первого типа проводилось с помощью полимеразно-цепной реакции. Всем пациентам, которые вошли в группу контроля и пациентам с эссенциальной гипертензией проводили дерматоглифическое обследование пальцев обоих кистей с помощью современного портативного сканера Futronic FS50 (Корея). Трактовка и розшифровка дерматоглифических рисунков проводилась по методике Т.Д. Гладковой. Математическую обработку выполняли на персональном компьютере с использованием стандартного статистического пакета STATISTICA 10,0. Обнаружено, что среди мужчин независимо от наличия или отсутствия эссенциальной гипертензии и хронической сердечной недостаточности среди всех дерматоглифических рисунков доминирует ульнарная петля.

Установлена позитивная связь между наследованием гена рецептора к ангиотезину II первого типа и рисунками на третьем пальце левой кисти у лиц без сердечно-сосудистой патологии (слабой силы) и на втором пальце правой кисти у мужчин больных эссенциальной гипертензией (средней силы). У лиц без сердечно-сосудистой патологии носителей генотипа A1166A частота распространенности ульнарной петли на третьем пальце левой кисти больше, чем у носителей аллели C гена рецептора к ангиотензину II первого типа. У мужчин с эссенциальной гипертензией носителей аллели C частота встречаемости завитка на втором пальце правой кисти достоверно больше, чем у носителей генотипа A1166A гена рецептора к ангиотензину II первого типа. Проведение дерматоглифического обследования пациентам с повышенным артериальным давлением и установление варианта носительства гена рецептора к ангиотензину II первого типа даст возможность облегчить отбор именно тех лиц, которым в дальнейшем нужно будет провести весь необходимый объём обследований для подтверждения диагноза эссенциальной гипертензии и возможного развития осложнений течения данного сердечно-сосудистого заболевания.

Ключевые слова: *дерматоглифы пальцев рук, полиморфизм гена рецептора ангиотензина II первого типа, эссенциальная гипертензия.*