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DERMATOGLYPHIC CHARACTERIZATION OF CONTEMPORARY BULGARIAN POPULATION FROM THE REGIONS OF PETRITCH AND MELNIK

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Summary: In this investigation were studied 200 men and 200 women commonly 400 individual of both sexes, according to 16 dermatoglyphic traits, from the regions of Melnik and Petritch. The processing and the analysis of the dermatoglyphic material was done according to the method of Cummins and Midlo (1961). In order to be established significant differences among the studied groups, according to the dermatoglyphic traits, was used the method of t – criterium.

It was done race-diagnostic analysis according to the percentage frequentcy of the studied dermatoglyphic traits and was established that the explored Bulgarian population from these regions belongs as a whole to the europeoid race.

Besides, it was established a bimanual with respect to the dermatoglyphic paterns on III interdigital pad, which are more frequently on the right hand, than on the left hand.

It was not established a sexual dimorphism (statistically significant) in the studied population from Melnik and Petritch by the dermatoglyphic traits.

On the basis of the mathematic-statistical processing, by means of t-criterium, it was established, that by the majority of the dermatoglyphic traits, the differences between the studied population from the regions of Melnik and Petritch are statistically insignificant, witch is an indication for their closenes by this traits.

Key words: dermatoglyphic traits, race-diagnostic analysis

The aim of this investigation was to make a full dermatoglyphic characterization of the bulgarians from the regions of Petritch and Melnik. In connection with that, it was done a race-diagnostic analysis of the population and was defined the degree of nearness or difference between both studied groups.

Material and methods

The investigation was carried out on the territory of Bulgaria in the regions of Petritch and Melnik. The studied individuals are bulgarians, according to their ethnogenesis, and are presented of two groups from different regions of the country.

It were studied by 100 men and 100 women of both regions, or, as a whole, 400 individuals of both sexes.

It was done an analysis of the dermatoglyphic material by the method of Cummins and Midlo (1961). The dermatoglyphic material is collected by means of printing ink and processed by magnifying glass (binokouliar loup). It were analysed the finger patterns, finger triradii and main palmar lines, axial triradii and palmar patterns.

Patterns on the last phalangs of the fingers. There are three types of patterns: arcs, that can be simple (A) and complex (T); loops (L), that characteristic with a presence of one triradius and whorls (W) that has two triradii.

Finger triradii, main palmar lines, and palmar pads. The triradius is the peace, where meet three systems of papilar lines. The triradius has two short distal radiants, that embrace the palmar pads (cushions) in the basis of II to V finger, and one longer, proximal radiant. These proximal radiants are the main palmar lines – A, B, C, D. These palmar lines are traced where they finish and for this reason the palmar is divided into 13 palmar pads.

Axial triradii. The axial triradius is formed from three systems of papilar lines. There are three types of axial triradii according to the place, where it is situated and namely: carpal (t), intermediate (t') and central (t"). They are observed, sometimes, more than one axial triradii. The definition of the axial triradius is realized by the method of Sharma (1964).

Palmar patterns. There are papilar patterns on six palmar pads: Thenar (in the base of I finger), Hypothenar (in the base of V finger) and I, II, III, IV interfinger pads. The most often meet arcs (A), more seldom are observed loops (L) and whorls (W).

Results

The results received from this study are presented in tables.

Patterns of the last falangs of the fingers and indexes. Table 1.

From this table is seen, that in both studied groups predominates the loops, as in men so in women. However, in Petritch the loops in men have bigger frequency than the men in Melnik and about the women, the loops predominate in these one from Melnik. In both Bulgarian populations, studied from us, follows the frequency of the arcs, that is bigger in the women of both studied groups.

The delta index is higher in the group from Petritch, and the values of this index are nearly equally in both sexes.

Main palmar lines and index of Cummins. The results of this index are given in table 2. It is seen that the type 3(+4) of line A is the most frequently met in both sexes and in both studied groups. The most seldom is observed the type 1(+2) in the studied population and predominates in women in both groups.

Type 11(+12+13) of line D predominates in the whole Bulgarian population and in the studied two groups it predominates in men. Only in women from Melnik predominates the type 9(+10).

The index of Cummins is higher in both sexes of Bulgarians from the group of Petritch and it has a higher values in men.

Table 1. Frequency of finger patterns and indexes in the population from Petritch and Melnik
Tabela 1. Distribucija tipova šara prstiju i indeksa kod stanovnistva Petriča i Melnika

Traits/ Obeležja	Petritch		Melnik	
	women/žene	men/muškaraci	women/žene	men/muškaraci
A+T	8,1	3,8	8,1	7,5
R	4,4	3,2	3,5	4,8
U	45,9	54,00	60,5	50,5
W	41,6	39,00	27,9	37,2
L	50,3	57,2	64	55,3
DL	13,35	13,52	11,98	12,97
W/L.100	82,70	68,18	43,59	67,27
A/L.100	16,10	6,64	12,65	13,56
A/W.100	19,47	9,74	29,03	20,16

Type 4(+5'+5"+6+7) of line C shows the biggest percentage in the studied population. From this table is seen, that this type is characteristic mainly for the women in both groups and it is more frequently in women from Petritch.

Line B in the population from Petritch is represented mostly from two types and a type 6(+7+8+9) predominates in men and a type 3(+4+5'+5") – in women. In the group from Melnik a type 6(+7+8+9) predominates in women and a type 3(+4+5'+5") – in men.

Table 2. Frequency of types of main palm lines A, B, C, D and index of Cummins in the population from Petritch and Melnik
Tabela 2. Tipovi linija dlana, indeks Cummins-a kod stanovnistva Petriča Melnika

Main palm lines/ linija dlane		Petritch		Melnik	
		women/žene	men/muškaraci	women/žene	men/muškaraci
A	1 (+2)	7,5	3.00	7.00	1.5
	3 (+4)	57.00	59.00	55.00	52.00
	5'(+5"+6+7)	35.00	36.5	35.5	40.00
D	7 (+8+H+0)	20.00	7.5	10.00	11.00
	9(+10)	36.5	38.5	45.5	41.00
	11(+12+13)	39.5	53.00	44.00	47.00
Index of Cummins/ Indeks Cummins-a		8.25	8.90	4.25	4.15
S	4(+5'+5"+6+7)	55.5	37.5	44.00	38.5
	9(+10+11+12)	38.5	45.00	41.5	49.00
	8(+H)	6.5	14.00	6.5	6.00
	0	4.5	5.00	5.5	5.5
V	6(+7+8+9)	44.5	56.00	54.00	53.5
	3(+4+5'+5")	55.00	45.00	47.00	47.5
	0	0.5	0	0	0

Axial triradii. From the table 3 is seen, that the most frequently met is the carpal axial triradius in the studied groups. In these groups the most seldom meets the com-

bination of two axial triradii and it was not established a combination from three axial triradii or lack of axial triradius, as well.

Table 3. Frequency of axial triradii in the population from Petritch and Melnik
Tabela 3. Distribucija aksijalnih triradiusa kod stanovništva Petriča i Melnika

Axial triradii/ Aksijalnih triradiusi	Petritch		Melnik	
	women/žene	men/muškaraci	women/žene	men/muškaraci
t	66.00	72.5	59.00	71.00
t’	22.00	11.5	22.00	17.5
t”	3.5	4.00	5.5	0.5
tt’	4.5	8.5	10.5	9.00
tt”	3.00	3.00	3.00	1.5
t’t”	1.00	0.5	0	0.5
tt’t”	0	0	0	0
tt	0	0	0	0
t’t’	0	0	0	0
0+h	0	0	0	0

Palm patterns and additionally interdigital triradiii. The results are represented in table 4.

Comparatively often are observed palmar patterns on the Hypothenare, in the groups from Melnik and Petritch. The patterns of Hypothenar are characteristic more frequently for the men from Petritch and for the women from the region of Melnik.

It was observed, more frequently, patterns on III interdigital pad in men from the region of Petritch. Besides, for the men from Petritch is characteristic a higher frequently of additional interdigital triradii.

Table 4. Frequency of palm patterns, additional triradii in the population from Petritch and Melnik
Tabela 4. Distribucija šara dlana i DMT kod stanovništva Petriča i Melnika

Traits/ obeležja	Petritch		Melnik	
	women/žene	men/muškaraci	women/žene	men/muškaraci
Hy	35.5	41	37.5	34
TH/I	6.00	5.00	7.00	14.5
II	5.00	13.00	3.5	4
III	34.5	58.00	36.5	41
IV	45	24.00	39.5	40
DMT	8.00	19.5	9.5	10

Discussion

It was done a comparatively analysis between 8 dermatoglyphic traits – DL10, t, Th/I, II, III, IV and AJT by means of t-criteriu of the population from both regions, as a whole, in other to be established if this population is homogenous or is different according to these traits.

So, at comparison of men and women from Petritch, according to the dermatoglyphic traits, by means of t-criterium, significant differences were not observed. The same is between both sexes of the population from Melnik.

In comparison of the dermatoglyphic traits in women from both regions, significant differences are observed only by one trait – III interdigital pad, at the highest degree of significance – $p<0.001$, The same picture is observed in comparison, of these traits in men from both regions – significant differences are observed only by the trait III interdigital pad, at $p<0.01$.

There are no significant differences in the population from both regions, according to the rest traits that is an indication for its nearness, by the dermatoglyphic traits.

It was done and a race-diagnostic analysis of the population from both regions of South-Western Bulgaria, on the base of the percentage frequency of the dermatoglyphic traits.

From the analysis of the results received of the studied population, it was established, that by the percentage frequency of arcs, loops, whorls, and delta index and according to the presence of two and three triradii, simultaneously, this population is in the limits of the europoid populations.

The same is about the distribution of the main palmar lines in the studied population. Only in this one from Petritch it was observed an weak "eastern" tendency because of a predomination of the ulnar type of line C above the radial type.

Table 5. Comparison of dermatoglyphical traits in the population from Petritch and Melnik according to t-criterion
Tabela 5. Upređivanje rezultata dermatoglifskih obeležja uz pomoć t-kriterijuma kod stanovnistva Petriča i Melnika

traits/ obeležja	men- women from Petritch/ muškarci-žene Petrič	men-women from Melnik/ muškarci-žene Melnik	women from Petritch and Melnik/ žena - Petriča i Melnika	men from Petritch and Melnik/ muškarci - Petriča i Melnika
DL	0.57	0.04	0.3	0.14
t	0.65	0.85	0.22	0.57
Hy	0.85	0.38	0.6	0.3
Th/I	1.09	0.48	1.32	1.95
II	0.28	0.75	1.62	1.7
III	0.41	1.32	3.8	4.82
IV	1.17	1.16	0.33	1.56
DMT	0.36	0.41	1.05	0.38

Conclusion

1. It was established a bimanual asymmetry by one dermatoglyphic trait only – III interdigital pad in the studied population from both regions.
2. A sexual dimorphysme, statistically significant, was established only in the population from Melnik, but by the trait III interdigital trait only. This shows, that the both sexes are too close by the dermatoglyphic traits in the population from both regions.

3. The comparatively analysis, by means of t-criterium showed, that by the majority of the dermatoglyphic traits, the differences between the studied populations from Petritch and Melnik are statistically insignificant, that is an indication for their closeness (homogenousness) according to these traits.
4. On the base of the race-diagnostic analysis, by the percentage frequency of the dermatoglyphic traits, it was established that the studied population from both regions, as a whole, is in the limits of the europoid populations. Nevertheless, in the population from the region of Petritch was observed an week "eastern" (mongoloid) tendency, which is expressed in this that the ulnar type of line C predominates above the radial type. The last one phenomenon is characteristic for the mongoloids.

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DERMATOGLIFSKA ANALISA BUGARSKOG STANOVNIŠTVA MELNIKA I PETRIČA

Izvod

Ispitano je 16 dermatoglifskih osobina kod 200 muškaraca i 200 žena bugarske nacionalnosti u regionu Petrič i Melnik. Obrada dermatoglifskih podataka je urađena metodom Cumminsa i Midlo-a (1961), a značajnost razlika je određena t-testom.

Nisu nađene razlike u zastupljenosti pojedinih dermatoglifskih šara prema polu, kao i između populacija Melnika i Petriča i ove populacije i ukupnog Bugarskog stanovnistva. Pokazano je da su dobijeni podaci veoma slični sa rezultatima drugih autora. Međutim polne razlike su uočene u frekvenciji šara leve i desne ruke III interdigitalnog prostora. Na osnovu distribucije dermatoglifskih obeležja i matematičko statističkih analiza utvrđeno je da ovo stanovništvo karakteriše evropeidna struktura.

Ključne reči: Dermatoglifska obeležja, populaciono-diagnostička analiza