

I.V. Gunas, O.V. Dunaev<sup>1</sup>, O.G. Popadynets<sup>2</sup>, R.V. Kozoviy<sup>2</sup>, E.O. Kindrativ<sup>2</sup>  
 National Pirogov Memorial Medical University, Vinnytsya  
<sup>1</sup>Kharkiv National Medical University, Kharkiv  
<sup>2</sup>Ivano-Frankivsk National Medical University, Ivano-Frankivsk

## DERMATOGLYPHIC FEATURES OF THE MEN'S FEET IN DIFFERENT CISCARPATHIAN ETHNO-TERRITORIAL GROUPS

e-mail: igor.v.gunas@gmail.com

In the course of the study, we analyzed the ridge, delta count and the frequency of dermatoglyphic parameters located on the plantar surfaces of the feet, studied the correlations between the pattern type and ridge and delta counts. It is established that between dermatoglyphic signs of feet in men of different ethno-territorial groups of Prykarpattia (Boyks, Lemkos, Hutsuls) there are differences that allow to differentiate these ethno-territorial groups: Hutsuls have a low numerical value of the ridge count, no whorl and high frequency of loop patterns; for Boykos it is a low numerical value of the delta account and a low frequency of whorl patterns; for Lemkos it is a high numerical value of the ridge and delta account, a significant frequency of whorl patterns.

**Key words:** dermatoglyphics, ethnodermatoglyphics, dermatoglyphic patterns.

## І.В. Гунас, О.В. Дунаєв, О.Г. Попадинець, Р.В. Козовий, Е.О. Кіндратів ОСОБЛИВОСТІ ДЕРМАТОГЛІФІКИ СТОП У ЧОЛОВІКІВ РІЗНИХ ЕТНОТЕРИТОРІАЛЬНИХ ГРУП ПРИКАРПАТТЯ

У ході дослідження проаналізовані гребінцевий, дельтовий рахунок та частота стрічання дерматогліфічних параметрів розташованих на підошовних поверхнях стоп, вивчені кореляції між типом візерунка та гребінцевим і дельтовим рахунками. Встановлено, що між дерматогліфічними ознаками стоп у чоловіків різних етнотериторіальних груп Прикарпаття (бойки, лемки, гуцули) існують відмінності, що дозволяють диференціювати ці етнотериторіальні групи: у гуцулів це низьке числове значення гребінцевого рахунку та відсутність завиткових і висока частота петлевих візерунків, для бойків – це низьке числове значення дельтового рахунку та низька частота завиткових візерунків, для лемків – високе числове значення гребінцевого та дельтового рахунку, значна частота завиткових візерунків.

**Ключові слова:** дерматогліфіка, етнодерматогліфіка, дерматогліфічні візерунки.

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Ethnodermatoglyphics opens new perspectives for study, given the intensification of migration processes both within Ukraine and within the world [6, 11]. The continuous growth of world migration and assimilation creates all the conditions for the disappearance of pure ethnic groups and peoples. Therefore, in the context of the above, the issue of studying ethno-territorial and racial features of anthropometric, anthroposcopic and dermatoglyphic features of different ethno-territorial and regional groups in order to create regional gene pools remains relevant and discussed. Taking into account the above, it should be noted that today the issue is related to the study of the phenotypic and dermatoglyphic constitution of the population of Ukraine, taking into account regional and ethno-territorial affiliation.

Ridge pattern of arms and legs are genetically and epigenetically determined parameters, so the results obtained in its analysis have high information value, as an identification marker system in medicine, criminology, anthropology and population genetics [1, 6, 13].

Nowadays, the study of dermatoglyphic and anthropological features of different ethnic groups and peoples of the world is becoming increasingly popular. Analyzing a number of modern scientific works, we can conclude that the dermatoglyphics of different ethnic groups and peoples of the world is actively studied as an identification-marker system of historical, evolutionary processes [7, 8, 9, 12].

A number of scientific papers confirm that papillary patterns of the hands and feet have a hereditary basis, correlate with ethno-territorial and racial affiliation [5], gender and some congenital diseases, are practically not amenable to aging and are unchanged throughout life [2, 3, 14]. At the same time their expressiveness can decrease at considerable and long functional loading. After analyzing the dermatoglyphic markers of the toes, we found the average values of the frequency of occurrence of certain patterns in different ethnoterritorial and sex groups, as well as the nature of the correlations between pattern type and ridge and delta accounts.

**The purpose** of the study was to establish the features of dermatoglyphics of the feet in men of different ethno-territorial groups of Prykarpattia.

**Material and methods.** The material for the study was foot dermatoglyphs obtained from 260 males aged 18-59 years, who identified themselves as representatives of the Hutsul, Boyko, Lemko, and control group, which did not belong to any of these groups and live in the Carpathian region (fig. 1). The criteria for inclusion in the study groups were voluntary consent of the person, the absence of genetic pathology, pathology of the endocrine system and musculoskeletal system, age 18-59 years. Criteria for exclusion from the study were rejection of the study at any stage, the presence of genetic pathology, pathology of the endocrine system and musculoskeletal system, age under 18 and over 59 years.

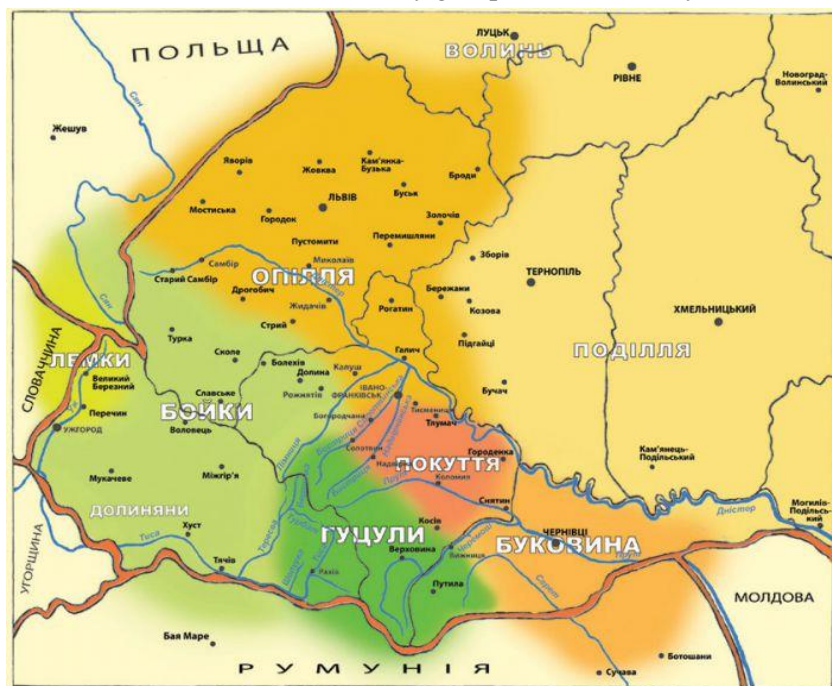


Fig. 1. Map of ethnic groups settlement in the territory of Ukraine.

Notes: Волинь – volhynians, Опілля – Opillya folk, Поділля – Podillya folk, Лемки – lemko folk, Бойки – boyko folk, Покуття – pokuttians, Гуцули – huzul folk, Буковина – bukovynians.

By macroimaging the plantar surface of the foot, we obtained dermatoglyphic parameters of the feet (fig. 2). The obtained files were processed by graphic software (drawing and design editor KOMPAS-3D LT), which greatly facilitated the study of qualitative and quantitative indices of feet dermatoglyphic parameters.

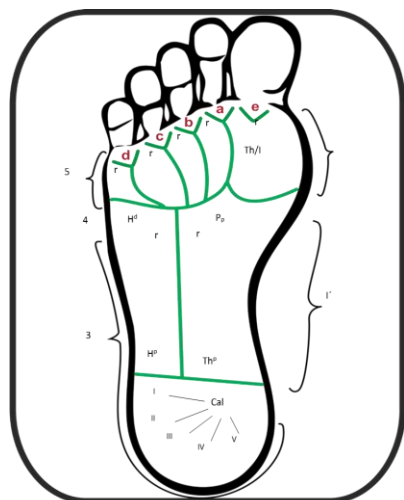


Fig. 2. Dermatoglyphic sole patterns: 1-5 – sole fields; a, b, c, d, e – toes;  $P_p$  – lower additional triradii; I-V – the direction of the papillary lines in the calcaneus (heel) area.

The data obtained by quantitative and qualitative study of morphological elements that form the dermatoglyphic parameters of the feet (type of papillary pattern, complexity of morphological structure, direction of papillary lines, etc.) were subjected to one- and multidimensional statistical analysis.

**Results of the study and their discussion.** Nigeria is one of the countries where the dermatoglyphic method is actively used and studied. And all this is due to the fact that this country is a home to more than 250 different ethnic groups living in different states and still having little contact with each other. Representatives of three ethnic groups – Hausa, Yoruba and Igbo, together make up just over half of Nigeria's population. A group of Nigerian scientists studied the features of dermatoglyphic indicators of the feet of the country's largest ethnic group – Hausa. The sample consisted of 357 people (222 men and 135 women). As a result of statistical analysis of the obtained results revealed: between men and women there is a statistically significant difference in the indicators of dermatoglyphic patterns on both legs. Thus, in women, the frequency of arches had the greatest value on the toes of the right foot (63 %) [4].

India is another country being a home to hundreds of various ethnic groups who speak different languages and have different scripts. In addition, it is also a multi-religious country. Neeti Kapoor and Ashish Badiye established the features of dermatoglyphic indicators for the Muslim population of India. Compared to other Indian nationalities – Rajputs, Rengma, Dhimals, Indian Muslims have lower pattern density indices (except Rengma), higher Dankmeijer's index, and lower Furuhashi's index values [10].

Zhang H. G. et al. [15] in a study of 122 populations in the North and South of China, representing 56 nationalities, found not only dermatoglyphic features for each ethnic group, but also differences and features for the North and South of China.

In the course of our study it was found that in males of the Hutsul ethno-territorial group the ridge score of the left foot is within  $10.5 \pm 0.57$ , delta –  $0.36 \pm 0.15$ , right –  $10.8 \pm 0.57$  and  $0.36 \pm 0.13$ , respectively. Also characteristic of Huzul folk is the predominance of patterns such as arc (A) and radial loop (LR).

As for males of the Lemko ethno-territorial group, the ridge score of the left corresponds to  $12.8 \pm 0.63$ , delta –  $0.57 \pm 0.16$ , right –  $13.8 \pm 0.35$  and  $0.53 \pm 0.14$  accordingly, the whorl type of patterns (W) also prevails.

In Boyko men, the ridge score of the left foot is in the range of  $12.8 \pm 0.75$ , delta –  $0.16 \pm 0.03$ , right –  $13.1 \pm 0.83$  and  $0.14 \pm 0.03$ , respectively, and so just like Hutsul men, type A and LR patterns predominate.

The control group of persons is characterized by a predominance of ulnar loops (LU) and the absence of W, in addition, the ridge score of the left foot is  $13.1 \pm 0.62$ , delta –  $0.18 \pm 0.06$ , right –  $12.7 \pm 0.83$  and  $0.11 \pm 0.03$ , respectively.

The study of the relationship between ethno-territorial affiliation and ridge foot count showed that in Hutsul men the ridge foot count is the lowest on the left foot and does not differ in other groups, and in males of the Lemko ethno-territorial group the ridge foot of the right foot and the right foot are respectively does not differ in Boyko and in the control group.

As for the delta account of the feet, it should be noted that in the men of the Lemko ethno-territorial group it is the highest, and on the right foot is the lowest among the representatives of the control and Boyko ethno-territorial groups.

After analyzing the correlations between descriptive (pattern type) and numerical characteristics (ridge and delta accounts), we learned that a strong correlation ( $r > 0.05$ ) in the Hutsul ethno-territorial group exists between the frequency A, LR, W and a ridge score on the right and left legs. Hutsul men are also characterized by a correlation between the number of deltas and W on both legs. Boyko men are characterized by a stable correlation between frequency A, LR and ridge count on the right and left legs, the number of deltas and W on both legs. As for the men of the Lemko ethno-territorial group, they have a strong correlation between frequency A and ridge score on both legs; the number of deltas and W on both legs. The control group of persons is characterized by the presence of a pronounced correlation between the frequency of A, LR and ridge score in both feet, the number of deltas and W in both feet.

A moderate correlation ( $0.03 > r > 0.05$ ) is determined in Hutsul men between the frequency of LU and the ridge count on the right and left legs, the pair of aLR and W, and the number of deltas on both legs. Representatives of the Boyko ethno-territorial group have a moderately correlated LU sign with a ridge score on both legs. Lemko men are characterized by a moderate correlation between the sign of LU and the ridge score on both legs, LR and W and the number of deltas on both legs. Men in the control group are characterized by a moderate correlation between LU and ridge score on both legs;

Thus, it is established that between dermatoglyphic signs of feet in males of the studied ethnoterritorial groups of Prykarpattia (Boyks, Lemkos, Huzul folk) there are differences that allow to differentiate these ethnoterritorial groups: in Huzul men it is low numerical value of ridge count, no whorl and high frequency of loop patterns, for men of the Boyko ethno-territorial group – low numerical value of the delta account and a low frequency of whorl patterns, for men of the Lemko ethno-territorial group – high numerical value of the ridge and delta account, a significant frequency of whorl patterns [4, 10, 15].

## Conclusions

The study of dermatoglyphics of the feet permits to identify factorial criteria for the diagnosis of constitutional features of an unknown person, which can be successfully used as identification markers, both in anthropological and forensic terms.

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**V.S. Drabovskiy, D.S. Avetikov, D.V. Kapustianskiy, S.V. Malyk, M.V. Bezruchko, O.S. Osipov**  
**Ukrainian Medical Stomatological Academy, Poltava**

## **SURGICAL TREATMENT OF COSMETIC BODY DEFECTS IN MESOMORPHIC PATIENTS**

e-mail: drabovskiy1987@gmail.com

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 A method for improving the stage of abdominoplasty in the trunk cosmetic defects correction in patients with mesomorphic body type, which provides retention suture with traction of the lateral edges of the upper transverse skin and fat flap with the rotation angle of 51–58° in men and 54–61° in women in order to create a uniform tissue tension due to the biomechanical properties of the anterior abdominal wall tissues. This method, compared to the known ones, revealed the following advantages: formation of a normotrophic scar at the incision site, reduction of local wound complications and other adverse consequences of correction, obtaining a satisfactory cosmetic result of abdominoplasty and improving the quality of life in patients.

**Keywords:** abdominoplasty, cosmetic scar, mesomorphs.

## **В.С. Драбовський, Д.С. Аветіков, Д.В. Капустянський, С.В. Малик, М.В. Безручко, О.С. Осіпов** **ХІРУРГІЧНЕ ЛІКУВАННЯ КОСМЕТИЧНИХ ДЕФЕКТІВ ТУЛУБА** **У ПАЦІЄНТІВ-МЕЗОМОРФІВ**

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 Запропоновано спосіб удосконалення етапу виконання абдомінопластики при корекції косметичних дефектів тулуба у пацієнтів з мезоморфним типом конституції, який передбачає на етапі ушивання операційної рани накладання провізорних швів із здійсненням тракції латеральних країв верхнього поперечного шкірно-жирового клаптя під діапазоном ротаційних кутів у чоловіків та 54–61° у жінок з метою створення рівномірного тканинного напруження за рахунок біомеханічних властивостей тканин передньої черевної стінки. Даний спосіб у порівнянні із відомими, виявив наступні переваги: формування на місці розрізу нормотрофічного рубця, зменшення кількості місцевих ранових ускладнень та інших небажаних наслідків корекції, отримання задовільного косметичного результату абдомінопластики та підвищення рівня якості життя пацієнтів.

**Ключові слова:** абдомінопластика, косметичний рубець, мезоморфи.

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Postoperative scars, the consequences of pregnancy and childbirth, lipodystrophy and other factors contribute to formation of unsatisfactory cosmetic appearance of the anterior abdominal wall (AAW), deform the contours of the body and figure, cause dissatisfaction with appearance, which reduces the quality of life [1, 2]. Despite the achievements of plastic surgery and the experience gained in performing operations to correct cosmetic defects of the AAW, 18.5–28.7 % of people have early and late