

## STAGES OF FORENSIC MEDICINE EXAMINATION WITH THE USE OF MOLECULAR GENETIC METHODS WITH THE AIM OF PERSON IDENTIFICATION OF UNKNOWN CORPSES IN CASES OF MASSIVE DEATH OF PEOPLE WITH A KNOWN NUMBER OF VICTIMS

Kryvda R. G., Lantsman I. V.

**Summary.** In the article the main stages of conducting forensic medicine examination with the use of molecular-genetic methods with the aim of person identification in cases of massive death with limited number of victims are discussed. The analysis of similar expert cases from the practice of forensic medicine experts-geneticists of department of forensic medicine molecular genetic examinations of the Odessa Regional Bureau of Forensic Medicine Examination was conducted. Based on the results of the analysis, recommendations are made for the organization and conducting of each stage of forensic medicine examination with the aim of person identification in cases of massive death of people with a limited number of victims.

**Key words:** person identification, massive death of people, DNA, molecular genetic methods.

UDK 340.6

## ACTUALY QUESTIONS OF FORENSIC MEDICAL DERMATOGLYPHICS

©V.D. Mishalov, I.V. Gunas,\* G.F. Kryvda \*\*,  
V.T. Bachinsky \*\*, V. V. Voichenko \*\*\*\*

Shupyk National Medical Academy of postgraduate education  
\*National Pirogov Memorial Medical University, Vinnytsya  
\*\* Odessa National Medical University  
\*\*\* Bukovinian State Medical University  
\*\*\*\* Dnipropetrovsk State Forensic Medical Bureau

**Resume.** The article examines the historical information regarding the use of dermatoglyphics during the identification of an unknown person. Outlined by new perspectives of using modern developments in the field of forensic criminology in studying skin patterns and the development of diagnostic algorithms common phenotypic traits of human. The analysis of the latest scientific publications on the given problem was carried out.

**Keywords:** forensic science, dermatoglyphics.

The unique morphological structure of the papillary pattern, which in its essence is a genetically determined manifestation of the phenotype, consists of structural elements, readily accessible quantitative and qualitative study, over a long period of time attracts the attention of a large number of researchers of various practical and theoretical branches of science. Data obtained in the study of the features of the structure, location, inheritance of dermatological parameters are used in solving a number of issues arising in the field of activities of various industries, both medical and non medical science [1,2] in the development of digital methods of fixation, recognition, improvement of the quality of received images of dermatological parameters, as well as the use of computer technologies in order to create an electronic archive of received images, statistical processing of the obtained qualitative and quantitative data, using the results obtained for the purpose of order to predict the external recognizable signs of a person.

The study of structural and morphological elements of the papillary pattern has a great practical value and a number of advantages for analysis in comparison with other anatomical structures of an organism. They are readily available for quantitative and qualitative study, for their analysis there is no need for expensive reagents and specially trained personnel. In the future, the obtained data allow to predict the occurrence of pathological conditions and psychological peculiarities of a person, as well as to predict physical abilities and anthropo-phenotypic features of a person. That is, dermatological parameters are, to a large extent, an information potential that can be used as genetic markers in clinical medicine, anthropology, genetics and other industries [3,4].

Dermatoglyphic parameters are characterized by high group and individual variability, pronounced polymorphism and high inheritance. The above criteria determine the scope of practical application of dermatoglyphics in genetics. S. Holt, in 1961 found that the size of the comb account is determined by a certain set of polygenic autosomal genes with an independent effect, without domination. In 1964 J. Pons confirmed the hereditary nature of the comb account on the fingers and hands.

The dermatological method is widely used in the conduct of anthropological research on issues related to ethno-racial affiliation. One of the scientists who used the dermatological method in anthropological studies is Hit H. L., who studied the dermatological parameters of the peoples of the Caucasus and Transcaucasia. Namely, in her work 1974-75rr. («Dermatoglyphics of the peoples of Central Asia in connection with problems of their origin») highlighted the

razogenetic, ethnopolitative relationships of the population of the Caucasus, Central Asia and the South of the European part of the USSR [1].

Regarding the Ukrainian ethnodermatoglyfik, S.V. Segeda made a significant contribution to its development. [5], who studied the differentiation of Ukrainian population by dermatological parameters. Based on the data obtained, he analyzed the variations of the main features of this system and identified local dermatological variants (complexes) on the territory of Ukraine (northern, central and southern). Using the data obtained during the study, he identified clear dermatological parameters that are characteristic of each of the complexes and compared with ethno-territorial groups living in neighboring territories. This allowed him to highlight the general dermatological parameters of Ukrainians against the background of other ethnic groups living in Europe and Asia.

With the works of Segeda S.P. are echoed the works done by Mishalov V.D., Gunas I.V. and softened. [6] and Kozan N.M. [7], which are also devoted to the study of ethno-territorial features of the dermatoglyphics of the Ukrainian people.

As for the automation of dermatological studies, then in 1996, I.A. Apollonova was developed a biotechnical laser system of dermatoglyphic diagnosis of hereditary diseases [8]. In 2001 I.V. Karasev [9] supplemented and perfected the system, proposed by Apollonova. Proposed by the authors hardware and software complexes were developed for the purpose of using medical genetic screenings, based on the use of such stable human parameters as dermatoglyphic. However, the proposed software and hardware complexes had a number of shortcomings, namely, they did not allow the quantitative analysis of dermatological patterns, to determine the asymmetry and subtype of the pattern. A.A. Hurlev [10] in 2007, tried to eliminate these disadvantages by developing a biotechnical system for automated dermatological studies that determined the inclination to schizophrenia using an automatic quantitative analysis of dermatological parameters.

Today, researchers working in the field of dermatological research have opened new opportunities that to some extent facilitate the process of harvesting and processing the actual material, including statistical analysis and forecasting (Dimitriyev AV, 2006). The rapid development of new technologies has initiated the development of electronic scanners that allow dermatological imprints to be obtained in sufficiently high quality regardless of the initial parameters of the examining finger, palm or foot. Also opened the possibility of using a variety of computer programs, which greatly facilitated the process of quantitative analysis and statistical processing of the data under study. Oghenemavwe Ese Loveday, Osaat Roseline Sunday, 2015 in their scientific work «An Improvised Easy Digital Method for Palmar and Plantar Dermatoglyphics» offered to use for the collection of dermatological material Hp Scanjet scanner, version 2010. The researchers have described in stages the scanning process, which makes it possible to receive high-quality dermatological scans, adjust image quality by cleaning dust and other pollutants, removing scratches, inverting scan colors, and automatically save images to a PC using USB. Also, the authors proposed software Autocad which makes it possible to analyze the resulting image, including the definition of comb account and the measurement of angles with very high accuracy.

Constitutional, physical and external-recognizable features, are the stable basis of the integral individuality of a person, that is, the integrity of the morphological and functional features, which is determined by the genotype, and can be determined using dermatological markers. Paying attention to the above, we can say that dermatoglyphics can be one of the basic options for solving problems associated with the identification of an unknown person.

#### References

1. **Hyt G.L.**, Shyrobokov I.G., I.A. Slavolyubova Dermatoglyphics in antorolohyy / Otv. Ed. IG Shyrobokov - Spb.: Nestorystoryya, 2012, 376 p.(in Russian)
2. **Bozhchenko A.P.**, Tolmachev I.A., Moiseenko S.A., Kolkutin V.V., Rakitin V.A. Opportunities and prospects of forensic dermatoglyphics // Sud. med. expert of, 2009. №3. p.33-36 (in Russian)
3. **Abramova T.F.** Finger dermatoglyphics and physical abilities, 2003 (in Russian)
4. **Sokolova O.A.** Diagnostics fingerprinting: monograph, M.: Yurlitinform, 2013, p.192 (in Russian).
5. **Segeda S.P.** Anthropological composition of the Ukrainian people: ethnogenetic aspect: author's abstract. dis for gaining sciences step doc. history sciences: special 07.00.05 «Ethnology», 03.00.14 «Anthropology» / S.P. Segeda - Kyiv, 2002 - 28 p.(in Ukrainian).
6. **Mishalov V.**, Klimas L., Gunas V., 2016, «Demographic variability indicators of somatically healthy men from different administrative and territorial regions of Ukraine», Curr.Issues Pharm.Med.Sci.,Vol.29. ,No2. , P. 90-93 (in English).
7. **Kozan N.** Using theartificial neural networks of identification unknown person/N.M.Kozan, Yu.Z.Kotsyubynska, G.M.Zelenchuk- IOSR Journal of dental and medical sciences/ - Vol/16,Issue 4 Ver.III (Apr/2017). P. 107-113 (in English).
8. **Apollonova I.A.** Biotechnical laser system of dermatoglyphic diagnostics: the abstract, dissertations. ... cand. tech. Sciences: specialty 05.11.17 / I.A. Apollonov. - Moscow: Moscow. state. tech. un-t them. N.E. Bauman, 1996 (in Russian).

9. Karasev I.V. Biotechnical system of laser dermatoglyphic diagnostics of hereditary diseases: dis. ... cand. tech. sciences: specialty 05.11.17 / I.V. Karasev. - Moscow: Moscow. state. tech. un-t them. N.E. Bauman, 2001 (in Russian).
10. Khrulev A.A. Biotechnical system of automated dermatoglyphic studies of hereditary predisposition to schizophrenia: dis. ... cand. tech. Sciences: specialty 05.11.17 / A.A. Khrulev. - Moscow: Moscow. state. tech. un-t them. N.E. Bauman, 2007 (in Russian).

## АКТУАЛЬНІ ПИТАННЯ СУДОВО-МЕДИЧНОЇ ДЕРМАТОГЛІФІКИ

В.Д. Мішалов, І.В. Гунас, Г.Ф. Кривда, В.Т. Бачинський, В.В. Войченко

**Резюме.** У статті викладено дані про використання дерматогліфіки під час судово-медичної ідентифікації невідомої особи. Представлено нові перспективи використання сучасних досягнень у галузі криміналістичної криміналістики при вивченні дерматогліфічних моделей та розробці алгоритмів діагностики загальних фенотипічних рис людини. Проведено аналіз останніх наукових публікацій з даної проблеми.

**Ключові слова:** криміналістика, дерматогліфіка.

## АКТУАЛЬНЫЕ ВОПРОСЫ СУДЕБНО-МЕДИЦИНСКОЙ ДЕРМАТОГЛИФИКИ

В.Д. Мишалов, И.В. Гунас, Г.Ф. Кривда, В.Т. Бачинский, В.В. Войченко

**Резюме.** В статье изложены данные об использовании дерматоглифики при судебно-медицинской идентификации неизвестного лица. Представлены новые перспективы использования современных достижений в области судебно-медицинской криминалистики при изучении дерматоглифических моделей и разработке алгоритмов диагностики общих фенотипических признаков человека. Проведен анализ последних научных публикаций по данной проблеме.

**Ключевые слова:** криминалистика, дерматоглифика.

UDK 340.6 + 343

## DISCRIMINATING MODELS OF DERMATOGLYPHIC PRIORITY OF PRACTICALLY HEALTHY MEN TO SOUTHERN OR OTHER ADMINISTRATIVE-TERRITORIAL REGIONS OF UKRAINE

©Mishalov V. D.<sup>1</sup>, Gunas V. I.<sup>2</sup>

Shupyk National Medical Academy of Postgraduate Education<sup>1</sup>  
National Pirogov Memorial Medical University, Vinnytsya<sup>2</sup>

**Summary.** In the article, on the basis of peculiarities of indicators of finger and palmar dermatoglyphics, the analysis of reliable discriminatory models of the affiliation of practically healthy men to the southern or other administrative-territorial regions of Ukraine was constructed and conducted. In most cases, the combination of all dermatological variables has a low level of discrimination (the highest level is established between men of the southern and northern regions of Ukraine). Most often, discriminant variables between men of the southern and other regions of Ukraine are the type of pattern on the fingers of the right hand and the asymmetry of the comb account of the palm lines.

**Key words:** dermatoglyphic, administrative-territorial regions of Ukraine, discriminatory analysis, practically healthy men.

### Introduction.

The beginning of the twenty-first century was marked by a new outbreak of military conflicts around the world, waves of illegal migration from third countries, and an aggravation of the criminal and terrorist situation in regions where peace and quiet until recently were. Accordingly, the police need to answer the question of identification of living persons who deliberately conceal their place of origin and the identification of the deceased or their remains.

One of way to help answer this question is to use a dermatological study method. We should notice studies in which the features of the skin figure were studied among representatives of various ethnic minorities, tribes and certain regions, and the existence of relationships between the investigated parameters was proved [6, 9, 10].

Works of this nature are quite small in Ukraine [4]. And even they cannot completely satisfy the queries that are facing us in the current situation when it is necessary to apply a cheap and simple method that will help in solving the issue of recognizing the regional identity of the person. An optimal solution to the problem of regional identification of