

Conclusions. Thus, improving the method prints comb figure fingers and toes (when using the scanner Futronic's FS80), as well as digitize the data using a digital method (algorithm VeriFinger 6.6 / MegaMatcher 4.4 Identification Technology Algorithm), and improving the quality of the obtained scans (using prints transforming raster to vector graphics) will improve the objectivity of evidence and forensics to identify the individual.

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ВИКОРИСТАННЯ ЦИФРОВИХ МЕТОДИК У ДЕРМАТОГЛІФІЧНИХ ДОСЛІДЖЕННЯХ

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Резюме. В статті представлена методика отримання сканів гребінцевого малюнку пальців рук і ніг та обробки одержаних даних при проведенні судово-медичної ідентифікації особи за допомогою дактилоскопії. Визначено ряд переваг цифрового методу отримання дермальних відбитків (при використанні сканеру Futronic's FS80), а також відображено шляхи покращення якості отриманих сканів, а саме за допомогою перетворення растрових відбитків у векторні графічні об'єкти з використанням алгоритму VeriFinger 6.6/MegaMatcher 4.4 Identification Technology Algorithm.

Ключові слова. Ідентифікація особи, дактилоскопія, дерматогліфіка.

UDK 340.6+343

APPLY OF DERMATOGLYPHIC METHOD DURING IDENTIFICATION OF A PERSON (literature review)

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Abstract: The article analyzes the recent publications on the issue of applying dermatoglyphics method of research as one of the methods that are used for identification of person. Importance of dermatoglyphic method of research in forensic medicine and criminology is displayed. Connection of forensic dermatoglyphics with other medical and non-medical sciences is presented.

Key words: dermatoglyphics, fingerprinting, identification of individuals.

Dermatoglyphics has been the subject of research by specialists in various fields of knowledge for over a century. Results obtained by examining comb drawing of person's hands and feet still remain informative source in medicine, criminology, anthropology and population genetics. Genetic conditionality of dermatoglyphics parameters allows to use dermatoglyphics to solve a number of issues that arise during ethno-antropological and population-genetic studies [19, 27, 28, 29]. Widespread use of dermatoglyphics was found in medicine: clinical (in predicting the like lihood of various pathological conditions) [33, 34, 36] sports (in determining the physical capabilities of individuals) [1, 20, 35]. In practice of forensic medicine dermatoglyphics has been used till recently in the examination of disputed paternity [9, 10, 11, 12], therefore during last decades it has also been actively used in the definition of family membership (examination of affinity), analysis of family ties with the further use of the data for identification of unknown persons, using dermatoglyphics parameters of relatives [3, 9, 10]. It is important to note that the greatest problem in diagnostic family ties, ethnic-territorial and racial variability of dermatoglyphics parameters is considered in methodological researches, based on the study of main palmar lines [35], dermatoglyphics signs of feet, papillary drawings of distal phalanges of the fingers [2, 3] and feet [24, 25, 26] as well as avarageand medium phalanges of fingers [30].

Easiness in use, little waste of time and money allows to use widely dermatoglyphic methods, namely fingerprinting (from Gr. «dactilos» - finger) and palmoscopies (from Gr. «palma» - palm) and plantoglyphics (from Gr. «panta» - foot) in forensic science, criminology and forensic medicine [2, 3, 8, 9, 12, 23]. Using dermatoglyphic markers, criminalists

conduct identification of person of a criminal. [32] Forensic medical workers use this method in case of necessity for conducting person identification in the mass deaths caused by natural disasters, air and technological disasters, military conflicts, as well as during solving issues that are related to the establishment of family relationships in the examination of disputed paternity [9, 10, 11]. Researches in the field of forensic dermatoglyphics were conducted by L.Y. Shpak (2000) [30], P.V. Pinchuk (2002) [16], A.L. Fandyeyev (2005) [24, 25, 26], A.G. Sidorenko (2006) [21], A.P. Bozhchenko (2009) [3,4], E.S. Mazur (2009) [15] and others.

Dermatoglyphics parameters of palmar skin of fingers and toes (dermatoglyphic patterns) in their origin are unique morphogenetic phenomena relating to sustainable parameters of body that do not change far during life, are genetically determined and have some informational value, which can be used for identification of person. It is also worth noting that papillary pattern remains unchanged after death and postmortem changes development. [24, 25] Comb pattern of skin has great practical importance and number of advantages for study and analysis in comparison with other antropo-metrical parameters so as enables to carry out a number of quantitative and qualitative researches that can be confidently referred to express methods used for identification of person.

Dermatoglyphics method is very popular in conducting anthropological researches as for solving issues related to ethno-racial affiliation. One of the researchers, who used dermatoglyphics method in anthropological studies, is Hit G.L. [27], who studied dermatoglyphic parameters of peoples of the Caucasus and Transcaucasia. Specifically, in her work of 1974-75-th ("Dermatoglyphics of peoples of Middle Asia related with problems of their origin») [28] there were highlighted racial-genetic, ethno-population connections of population of the Caucasus, Central Asia and the South of the European part of the USSR.

Great contribution in this direction made Sidorenko A.G. [21]. He has conducted complex study of dermatoglyphics of palms, which allowed him to identify racial and sex differences based on quantitative and qualitative indicators, taking into account the topography and of three radial and voluntary pattern, as well as presence or absence of basic and additional three-radials; established a significant correlation in the manifestation of rare dermatoglyphics signs between palms of children and real parents.

As for the Ukrainian ethno-dermatoglyphics, the significant contribution to its development made Segeda S.P. [19], who studied the differentiation of the population of Ukraine by dermatoglyphics parameters. Based on received data he has conducted analysis of variations of the main features of this system and has identified local dermatoglyphic options (complexes) in Ukraine (north, central and southern). Using data obtained during the research, he identified clear dermatoglyphic parameters that are specific to each of the complexes and conducted comparison with ethno-territorial groups living on the neighboring territories. This allowed him to identify common dermatoglyphic parameters of Ukrainians compared to other ethnic groups living on the territory of Europe and Asia.

Mazur E.S. [14] was the first to connect in forensic medicine and criminology dermatoglyphic markers with anthropometric parameters. Specifically, research of finger and palmar dermatoglyphics was carried out using the original software, that includes the assessment of comb account in the arc, cranial and complex (atypical) finger patterns and qualitative research of dermatoglyphics signs. Data obtained during the above mentioned study were analyzed by method multivariate statistics. Considering the obtained results, there was formed a certain array of parameters of person's constitution and there was showed statistically confirmed relationship between these parameters. Also, Mazur E. S. has developed models of diagnosis of sex affinity and body length on bases of which criteria of prognostic evaluation of physiognomic peculiarities and also diagnostic models of forecasting of absolute somatometric parameters of a person were developed.

Yarovenko V. V. [32] has wrote several works regarding the opportunities and advantages of dermatoglyphics method in criminalistic identification of a person at identifying individuals using fingerprint data, as well as at fingerprint registration and tracing criminals.

Much attention of forensic medical workers to dermatoglyphics is attracted to the possibility of its use during the installation identification by family kinship. In those cases where the fingerprint examination is not possible at forensic identification (including unidentified corpses), disputed paternity, maternity, substitution (loss, theft) of children and people who have lost their memory the definition of family kinship one of the criteria for identification is the definition of family affiliation (to establish family relationship). First such examination were conducted by Zvyahyn V. I. and Tarasov I.B. [8, 9, 10, 11, 23]. To assess intra similarities authors suggested to use an integrated approach based on genetic analysis - the first phase is biometric, the second is individualization, the third stage is establishing relationships. In the study of heredity of dermatoglyphic feet signs scientists have combined total approach to genetic analysis and local approach at individualization analysis have defined the possibility of use of different individual fingers when establishing internal family resemblance. They have found that the inheritance patterns of skin toes patterns have the same laws as the hands and fingers do not depend on the lateral localization patterns, the serial number of the finger and gender. It was established that with similar phenotypes of parents, the child inherits most of the fingers on the same type of homologous pattern, besides there is observed the opportunity of mirror symmetric «transitions» of skin patterns from parents to children or homologous to adjacent finger.

The issue of inheritance dermatoglyphics signs was actively studied by Fandyeyev A. L. [26]. He investigated dermatoglyphic attributes of distal phalanges of the hands and feet and developed the original classification of shape of lines flow in the center of the pattern on the distal phalanges of hands and feet that for the first time made it possible to determine consequence of inheriting these patterns of inheritance of this trait, as well as a comparative analysis of the frequency of dermatoglyphics signs of distal phalanges top and lower extremities in population and family groups was done. Data of these studies have been clarified, supplemented and summarized by Fandeeva A. M., [24, 25]. She was first to have identified the importance of diagnostic indexes with consideration of sexual dimorphism and geto-lateral asymmetry of dermatoglyphics characteristics in populations and family groups. Also she has created universal diagnostic algorithms of determining consanguinity. The essence of the above mentioned algorithm is that unknown relative can be any member of the alleged family group; blood relationship can be defined as with taking into consideration or without consideration sex of the child.

Currently parameters of dermatoglyphics of middle and proximal phalanges are very little studied. The problem of this issue was studied by Shpak L. Y. [30]. She was one of the first researchers in anthropology, studying in combination dermatoglyphic options of distal, middle and proximal phalanges of the hand. In her works there are presented data relating to sexual dimorphism and bilateral digital variability, symmetry of skin relief of phalanges. For the first time there were identified patterns of inheritance patterns of middle and proximal phalanges. Shpak L. Y. showed the use of dermatoglyphics parameters of middle and proximal phalanges of the hand at the level of the distal phalanges parameters for identification, to establish kinship. She was first to develop classification of patterns of comb pattern of proximal and middle phalanges of hand's fingers, developed and formulated criteria by which we can determine the parameters of family kinship and affinity envisage establishing a child with one or both parents. The above mentioned criteria offer the possibility of identification of family ties as well as by complex of features of dermatoglyphics fingers, so also by one of phalangeal systems. Researcher put to full use classification of generalized patterns of middle and proximal phalanges of hand's fingers.

As a marker of inherited features of energy potential of the body and its adaptive capacity in different situations, dermatoglyphics is actively used to predict physical capacities of a person in sports medicine. In this direction, a sufficiently large number of studies were conducted by Abramova T. F. [1] and Sergienko L.P. [20].

Abramova T. F. formulated a holistic view of the diversity of inter-system connections of enotypology of finger dermatoglyphics and neuro-dynamics in the structure of the overall constitution of the human body; there were developed classifying signs of finger dermatoglyphics with their differentiation regarding to the specific profile of sporting activities; there was shown the relationship of general and specific features of finger dermatoglyphics with physical characteristics of a person.

Sergienko L. P. [21] in his studies has defined complex of dermatoglyphic markers associated with high expression of psycho-motor abilities in men. He described dermatoglyphic attributes, which in his opinion may be considered markers of genetic susceptibility to high psychomotor abilities in men, namely the type of finger pattern, total comb fingers pattern account, main palmar angle and angle ctd, dermatoglyphics length ct. Also, having analyzed the results of his research, it can be concluded that bimanual asymmetry of finger dermatoglyphics is not informative indicator in system of genetic prognosis of psychomotor abilities development. Sergienko L. P., based on his research, has identified recommendations for the use of the results in system of sports selection.

In recent years great quantity of works on dermatoglyphics correlation has appeared with various functional disorders of practically any system of organism. Guseva I.S. [5] has noticed that the most likely connection of dermatoglyphics with pathologies of systems of ectodermal origin and those that come from lateral and dorsal mesoderm, namely diseases of the nervous system, cardiovascular system, gross abnormalities of constitutional muscle system.

Having analyzed the above mentioned facts, we can confidently assert that dermatoglyphics method is quite informative, easy-to-use, not consuming in terms of time and costs. These characteristics allow to use widely dermatoglyphic method in forensic medical practice to solve issues related with person identification, determination of disputed paternity and family relationship. This method can complement and at the same time confirm the authenticity of a number of other methods and thereby to be part of a set of identifying methods.

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ЗАСТОСУВАННЯ МЕТОДУ ДЕРМАТОГЛІФІКИ ПРИ ІДЕНТИФІКАЦІЇ ОСОБИСТОСТІ (ОГЛЯД ЛІТЕРАТУРИ)

Коцюбинська Ю. З.

Резюме: У статті проведено аналіз останніх публікацій з проблеми використання дерматогліфічного методу дослідження, як одного із методів, що застосовуються при ідентифікації особи. Відображено значення дерматогліфічного методу дослідження у судовій медицині та криміналістиці. Представлено зв'язок судово-медичної дерматогліфіки з іншими медичними та немедичними науками.

Ключові слова: судово-медична експертиза, дерматогліфіка, ідентифікація особи.

ИСПОЛЬЗОВАНИЕ МЕТОДА ДЕРМАТОГЛИФИКИ ПРИ ИДЕНТИФИКАЦИИ ЛИЧНОСТИ (ОБЗОР ЛИТЕРАТУРЫ)

Коцюбинская Ю. З.

Резюме: В статье проведен анализ последних публикаций по проблеме использования дерматоглифического метода исследования, как одного из методов, применяемых при идентификации личности. Отражено значение дерматоглифического метода исследования в судебной медицине и криминалистике. Представлено связь судебно-медицинской дерматоглифики с другими медицинскими и немедицинским науками.

Ключевые слова: судебно-медицинская экспертиза, дерматоглифика, идентификация личности.

UDC: 616-079.6:[535.361+535.37]:612.824.1

POST-MORTEM INTERVAL ESTIMATION BY LASER-INDUCED FLUORESCENCE OF POLYCRYSTALLINE CEREBRO-SPINAL FLUID FILMS IMAGES

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ABSTRACT.

There are many new optical diagnostic methods (photometric, polarization and correlation techniques) of biological tissue structure assessment, which are the most perspective in post-mortem interval determination.