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Dermatoglyphic Forensic Diagnostics of Type 1 Diabetes Mellitus in Children

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ABSTRACT

Type 1 diabetes mellitus (T1DM) is a common endocrine disease in children and adolescents, associated with hereditary and autoimmune processes. Its early detection and prognosis are important. Dermatoglyphics is a method of studying the papillary lines of the skin of the fingers and palms, which contains information related to genetic and embryonic development. In this study, dermatoglyphic features in children with T1DM were studied, their susceptibility to the disease and their diagnostic significance were assessed. The results showed that changes in papillary lines, a relatively low number of spots and an increase in whorl patterns in children with T1DM were associated with genetic pathology. The results of the study will help to increase the possibilities of forensic examination and early detection of the disease using dermatoglyphic analysis.

KEYWORDS: type 1 diabetes, fingerprints, children, dermatoglyphics.

Purpose of the study. To study scientifically based dermatoglyphic criteria for the forensic diagnosis of type 1 diabetes in children and analyze the results.

Materials and methods. The material for the study was dermatoglyphic prints of 28 children aged 4-17 years, suffering from diabetes mellitus, of which 9 girls and 19 boys who were registered with an endocrinologist with a diagnosis of type 1 diabetes mellitus, and who died from a car accident. The control group included healthy children who died from another pathology.

The results obtained and their discussion are presented. Based on the study of dermatoglyphic criteria for the diagnosis of type 1 diabetes mellitus in children for forensic medical examination, the following changes were identified. The results of the study, conducted in order to improve the diagnosis of type 1 diabetes mellitus and forensic medical diagnostics, gave a number of important conclusions. Based on dermatoglyphic analysis, different features were identified between children with type 1 diabetes mellitus and the control group. The characteristics of dermatoglyphic patterns were studied in 28 children. During the study, changes in the composition of papillary lines and their distribution were observed in children with type 1 diabetes mellitus. Arch patterns - 9 are less common in sick children than in the normal population. Loop patterns – have a high frequency of occurrence on the index fingers, which is considered a characteristic sign of type 1

diabetes. Whorl patterns – were observed in 15 sick children, and their frequency was observed more often, and it was studied whether this is associated with genetic and embryonic factors. According to the results of the analysis, arch patterns – are rare in children with type 1 diabetes (in the range of 1-4%), loop patterns – are the most common (65-74%), and are considered a characteristic sign of type 1 diabetes. Whorl patterns – were observed in 22-34% of children. Finger asymmetry – was present in 16 of 28 children, and it was determined that this is associated with genetic and embryonic development. Changes in the structure of the palm were noted in 13 children.

CONCLUSION. The obtained results confirm the clinical significance of dermatoglyphic parameters in children with type 1 diabetes. The use of this method in forensic examination and clinical practice will serve to expand the possibility of early detection, prevention and prognosis of the first type of diabetes in the future.

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