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50 Years Ago in *The Journal of Pediatrics*

Down syndrome: Creases to chromosomes

Reed TE, Borgaonkar DS, Conneally PM, Yu P, Nance WE, Christian JC, et al. Dermatoglyphic nomogram for the diagnosis of Down's syndrome. J Pediatr 1970;77:1024-32.

"Dermatoglyphics" was a term coined in 1926 to describe the study of the ridges and lines in the skin for research in human anthropology and other scientific fields. Cummins, in collaboration with Ralph Victor Platou, head of Tulane's Department of Pediatrics, described the dermatoglyphic abnormalities in children with Down syndrome (trisomy 21) in 1950. In 1957, when chromosomal analysis was not possible, Norma Ford Walker described a diagnostic scoring system for Down syndrome that relied heavily on dermatoglyphics.[1]

Fifty years ago, Reed et al published a report on dermatoglyphic nomograms for the diagnosis of Down syndrome and identified 4 major variables that could identify 81% of individuals with Down syndrome: the right hallux pattern, the right ATD angle, and the patterns of both index fingers.

The 1960s and 1970s were the era of dermatoglyphics, when numerous scientific papers on Down syndrome and other genetic disorders were published. In few studies, parents of children with Down syndrome showed some dermatoglyphic abnormalities, but not specific enough to identify individuals with increased risk to offspring.[2] Dermatoglyphic patterns observed in patients with Alzheimer's disease closely correspond with patterns observed in Down syndrome, suggesting that a common genetic factor may be involved in epidermal ridge formation in fetal development, meiotic nondisjunction during gametogenesis, and accelerated neuronal senescence.[3]

Gradually, interest in and the importance of this discipline declined due to various reasons. The digital patterns observed in conditions of Down syndrome were nonspecific, being observed on the hands and fingers of normal individuals as well, and a specific pattern was not seen in all patients with Down syndrome. Moreover, evaluation of all digital patterns is cumbersome and difficult in a clinical setting. With the advancements in the field of molecular genetics, this fascinating field has lost its significance in the current era.[4] Simian crease is now the sole remnant of this field that is still referred to in evaluation of Down syndrome.

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