N. N. Laha
Lecturer in Medicine,
G.R. Medical College,
Gwalior, M.P.

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Palmar dermatoglyphics in mental retardation *

Palmar dermatoglyphics has been studied in 86 mentally retarded males versus 50 normal males. The important findings in brief are as follows:
(1) Frequency of patterns in descending order (all ten taken together) were ulnar loops followed by whorls, in both the groups.
(2) Highly significant differences were found between the two groups in right c-d, a-d, left a-b, a-d and vertical distance from a-d to the axial triradius, significant differences in left b-d, c-d and both distances from axial triradius to a vertical dropped proximally from triradius a.

The finding of this work has been compared with other authors. These findings give a base to classify mental retardation from the dermatoglyphic point of view, thus to help in diagnosis of the disease in newly born individuals.

Introduction

Dermatoglyphics is defined as «The surface markings (Sharply scultured ridges) of the skin, especially of the palmar and plantar regions» ¹. The study of dermatoglyphics is fascinating because it is a simple, yet complicated tool in the study of genetic disorders. The study of palm has been especially taken, as it provides a better insight into the study of the disease under consideration.

Mental retardation is quite a common and tragic disorder in human society. The purpose of studying dermatoglyphics in mental retardation is to derive diagnostic criteria from the dermatoglyphic point of view.

Material and methods

The study was conducted at G.R. Medical College, Gwalior, M.P. and a host of various mental retardation institutions spread over the country.

The present work comprises a study of palmar dermatoglyphics in 50 normal males and 86 mentally retarded males.

The 50 normal individuals were divided equally in the age groups of 10 years gap from 1 year onward. They were persons having no complaints and being able to carry out their work without any difficulty, with no family history of mental diseases and not suffering any time of their life with diseases which show dermatoglyphic changes (mental diseases, heart diseases, leukemia etc.).

86 cases of mental retardation were taken for the study, the main clinical features being, «delayed biologic development, immature social adaptation, and failure to develop the capacity for higher types of thought processes» ². The cases were considered as

¹ A part of the author's thesis entitled, «A study of dermatoglyphics in mental disorders of genetic origin», accepted for Ph.D. in Medicine by Jiwaji University, Gwalior, M.P.
idiopathic mental retardation. Mildly mentally retarded children who are normal for some time of their life after which they reveal delayed motor, language and social development, to severely mentally retarded children who present the features quite early in their life were included in the study. Detailed neurologic examination was done in case of every patient. Educational assessment and psychiatric interviews were done for every case. Psychiatric assessment was also done.

The palm would be cleaned and dried before printing. With the roller, printers ink placed on a sheet of a paper would be spread into a thin even film. The roller would be then rolled on the out stretched palm, assuring that spread is equal. The palm would then be applied on another sheet of a plain paper, with uniform pressure applied from the observer's palms. The palm would then be removed and the print then studied.

The parameters considered for the study included (1) digit patterns, (2) atd angles, (3) ridge count from triradial point to point of core, (4) metric analysis of palms (figure 1).

Results

In the 86 cases of mental retardation when compared with 50 normal males, the following results emerged.

When percentage of ridge patterns on finger tips (all ten) were taken into consideration then ulnar loops were found to have the highest representation in both, mental retardation (53.15%) as well as normal (57.4%), followed by whorls (32.67 and 30.4% respectively). Arches were 6.39% in mental retardation and 5.2% in normals. Double loops were 4.42% in mental retardation and 8% in normals. Radial loops were 3.14% in mental retardation and 1.14% in normals (Table 1). These findings were similar to those of Bandyopathyay who studied the finger dermatoglyphics in mentally retarded children in North India and found in order loops (50.42%), whorls (46.31%) and arches (2.24%). However, opposite findings were by Mutalik and Lokhandwala, and Heisch and Geipel who found excess of arches in their observations.

Mean values of atd angle in mental retardation and normals statistically show an insignificant difference (P > 0.05 - Table 2).

Mean values of ridge count from triradial point to point of core, between mental retardation and normal statistically show insignificant differences (P > 0.05 - Table 3).

<table>
<thead>
<tr>
<th>Mental retardation</th>
<th>Normals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulnar loops</td>
<td>53.15</td>
</tr>
<tr>
<td>Radial loops</td>
<td>3.14</td>
</tr>
<tr>
<td>Whorls</td>
<td>32.67</td>
</tr>
<tr>
<td>Arches</td>
<td>6.39</td>
</tr>
<tr>
<td>Double loops</td>
<td>4.42</td>
</tr>
</tbody>
</table>

Table 1 - Showing the digit patterns of the palm when percentage of ridge patterns on finger tips (all ten) of 86 cases of mental retardation (males) and 50 normal males were taken into consideration (figures are expressed in percentage).