Introduction:

Idiopathic epilepsy or primary generalized epilepsy is a tendency to have seizures when there is no structural abnormality in the brain. The primary cause could be genetic and a number of genes have been mapped, Baulac et al (2001) and Brismar (2000).

The annual incidence of new cases of epilepsy after infancy is 20-70/100,000. The recurrence rate after a first seizure approaches 70% during the first year and more recurrent attacks occur within a month or two of the first seizure Haslett et al (1999).

Dermatoglyphics, the study of fingerprints are constant and individualistic. Abnormalities in the epidermal ridges may result from genetic alterations occurring around the first trimester, during organogenetic period, between 13th-60th days after fertilization.

On this basis, it has been opined that any epidermal ridge alterations in individuals prone to epilepsy may have a distinctive dermatoglyphic feature, which remain unchanged throughout life Schaumann and Alter (1976).

So, the likelihood of idiopathic epilepsy could be predicted. Diagnostic significance of dermatoglyphics with idiopathic epilepsy, Schaumann et al (1982).

In this study, an attempt has been made to identify whether patients with idiopathic epilepsy express any specific dermatoglyphic features.

Material and Method:

The material for the study consisted of 100 patients (58 males, 42 females), and 100 controls (52 males, 48 females) from Bangalore. People with idiopathic epilepsy were taken and as much as possible, other diseases (especially those causing dermatoglyphic changes) were ruled out. The mean age of onset of epilepsy was 15.8 years in males and 13.9 years in females. 18.4% of the male patients and 10.2% of the female patients were products of consanguinous marriage. 12% of the males and 22.1% of the female patients had family history of epilepsy. Patients with generalized tonic clonic seizures were taken into account.

The controls were a mixed population, but age and sex matched. The controls were medical students, department faculty, and friends accompanying patients in M.S.Ramaiah Medical Teaching Hospital, Bangalore. But the essential criteria were the absence of epilepsy or epileptic tendency in any of them.
Modified ink method was applied. The materials used were printer's duplicating ink from Kores, cardboard roller, gauze pads and sheets of paper. Patients were asked to wash and dry their hands. A small quantity of ink was applied over the palm with a gauze piece and smeared thoroughly and uniformly. A sheet of paper was kept at the edge of the table. The palm was rolled on cardboard roller with paper, taking care that the cupped regions of the palm were printed properly.

Parameters observed were a-b ridge count, main line index (MLI) and palmar angles - 'atd', 'dat' and 'adt' angles. 'a-b' ridge count was done by counting the number of ridges crossing the line joining triradii 'a' and 'b' (Fig. a). Main lines 'A' and 'D' were drawn from triradii 'a' and 'd' and the main line index was recorded by adding the numbers given to terminations of 'A' and 'D' (Fig. b). Lines were drawn from triradii 'a' to 'd', 'd' to 't' and 'a' to 't' and the angles between them were measured (Fig. c). The student 't' test was applied to detect the significant parameters.

**Observations and Result:**

Observations were tabulated, compared with control and statistically analyzed.

Significant difference in the 'a-b' ridge count between the patients and controls of both males and females were not observed (Table I).

There was a significant increase in the MLI of right (8.21) and left (8.02) hand of female patients. The MLI was not found to be significantly different in the male

<table>
<thead>
<tr>
<th>Parameters</th>
<th>MP</th>
<th>M</th>
<th>FP</th>
<th>FC</th>
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<tbody>
<tr>
<td>a-b ridge count right</td>
<td>39.67 ± 5.31</td>
<td>37.79 ± 5.8 p&lt;0.31</td>
<td>38.76 ± 4.93</td>
<td>37.86 ± 5.87 p&lt;0.42</td>
</tr>
<tr>
<td>a-b ridge count left</td>
<td>40.96 ± 6.13</td>
<td>40.60 ± 4.39 p&lt;0.72</td>
<td>39.60 ± 5.01</td>
<td>38.5 ± 5.45 p&lt;0.47</td>
</tr>
<tr>
<td>MLI right</td>
<td>8.05 ± 1.28</td>
<td>8.10 ± 0.84 p&lt;0.73</td>
<td>8.21 ± 0.9</td>
<td>7.43 ± 0.96 p&lt;0.004 S</td>
</tr>
<tr>
<td>MLI left</td>
<td>7.94 ± 1.25</td>
<td>7.90 ± 0.82 p&lt;0.85</td>
<td>8.02 ± 0.78</td>
<td>7.50 ± 0.92 p&lt;0.01 S</td>
</tr>
<tr>
<td>'atd' right</td>
<td>43.14 ± 5.12</td>
<td>41 ± 5.01 p&lt;0.21</td>
<td>45.02 ± 4.35</td>
<td>44.26 ± 4.91 p&lt;0.49</td>
</tr>
<tr>
<td>'atd' left</td>
<td>44.1 ± 8.58</td>
<td>42.94 ± 8.68 p&lt;0.3</td>
<td>46.9 ± 5.84</td>
<td>44.98 ± 5.25 p&lt;0.15</td>
</tr>
<tr>
<td>'dat' right</td>
<td>58.12 ± 4.94</td>
<td>56.10 ± 5.11 p&lt;0.03 S</td>
<td>57.17 ± 3.78</td>
<td>55.64 ± 4.76 p&lt;0.16</td>
</tr>
<tr>
<td>'dat' left</td>
<td>57.4 ± 5.98</td>
<td>56.38 ± 5.14 p&lt;0.3</td>
<td>55.05 ± 4.12</td>
<td>54.32 ± 5.62 p&lt;0.68</td>
</tr>
<tr>
<td>'adt' right</td>
<td>78.74 ± 5.28</td>
<td>82.67 ± 4.77 p&lt;0.0001 S</td>
<td>77.81 ± 3.69</td>
<td>80.1 ± 3.5 p&lt;0.01 S</td>
</tr>
<tr>
<td>'adt' left</td>
<td>78.42 ± 8.72</td>
<td>80.69 ± 4.78 p&lt;0.03 S</td>
<td>78.5 ± 5.13</td>
<td>80.74 ± 4.09 p&lt;0.06</td>
</tr>
</tbody>
</table>

MP: male patient, MC: male control, FP: female patient, FC: female control
p: probability, S: significance (p<0.05)
patients and male controls (Table I).

In male patients, the ‘dat’ angle (58.12) was increased in the right hand and the ‘adt’ angle was decreased in both right (78.74) and left (78.42) hands. In the right hand of female patients, the ‘adt’ angle (77.81) was decreased (Table I).

**Discussion:**

On literature review, it was noticed that hardly few studies have reported the association between dermatoglyphics and idiopathic epilepsy. Quantitative dermatoglyphic traits have been utilized to find out the existence of genetic predisposition to seizures of various etiology, Schaumann et al (1982). These authors have found three significant variables in 197 males diagnosed with idiopathic epilepsy: i) increased main line index on right palm (p<0.01), ii) decreased ‘a-b’ ridge count on both palms (p<0.1) and iii) more frequent existence of the transversal sulcus. This data testified to a certain diagnostical and prognostical value of dermatoglyphic features.

In the present study, in the female epileptics, main line index was found to be significantly increased in both hands. There was no significant difference in ‘atd’ angle between the patients and controls in both hands of males and females. There was a significant increase in ‘dat’ angle in the right hand of male patients. There was a significant decrease in ‘adt’ angle in left and right hands of male patients, significant decrease in right hand of female patients.

This study has added on to the importance of dermatoglyphics. With the knowledge of dermatoglyphic pattern of a typical epileptic, it becomes imperative for the clinician to have the basic awareness of a dermatoglyphic pattern of idiopathic epilepsy, so that patients are informed and warned to avoid certain trigger factors of epilepsy.

**References:**

2. Brismar T. Molecular defects may cause epilepsy. New discoveries can provide better possibilities for directional diagnostics and treatment. Lakartidningen 2000; 97(45): 5102-5106.