A STUDY OF DERMATOGLYPHIC PATTERNS IN EPILEPTIC PATIENTS

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ABSTRACT
The aim of study was to establish a relation of dermatoglyphic patterns of palm in epileptic and normal subjects so that it may be used as a diagnostic tool for identifying cases at risk. The dermatoglyphic study was carried out on 50 patients of epilepsy and 50 normal subjects. The dermatoglyphic traits, which presented a significant difference, were a-b ridge count, lateral deviation, c-line pattern, palmar pattern and finger tip pattern. Mean values of a-b ridge count were more in epileptic patients, especially in left hand, than controls. The ratio of ulnar and radial lateral deviation in control was 1:3 while in epileptic it was 1:5 . C-line pattern presented less frequency of proximal and ulnar type patterns in cases. Radial type of C-line pattern was higher in cases. On the other hand this pattern was absent in 29% of controls than cases (8%). Arch type of palmar patterns were showing a very significant difference between controls (79%) and cases (2%). Frequency of loops were much more and vestiges were absolutely absent in cases. The frequency of Arch type of finger tip pattern was more in control. These findings suggest that antenatal factors may contribute to the etiology of epilepsy. A considerable progress in dermatoglyphics has been established as a useful diagnostic and research tool in medicine.

Key words- dermatoglyphic, palmar ridges, epilepsy, finger tip patterns.

INTRODUCTION
The study of patterns of epidermal ridges on fingers, palms, toes and soles is known as Dermatoglyphics and these ridges are constant and individualistic. Abnormalities in the epidermal ridges may result from genetic alterations occurring in first trimester. 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)[1]. So the likelihood of epilepsy could be predicted. Diagnostic significance of dermatoglyphic has been reported especially correlating dermatoglyphics with idiopathic epilepsy, Schauman et al (1982)[2].

Idiopathic epilepsy of primary generalized epilepsy type 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)[3] and Brismar (2000)[4]. In this study, an attempt has been made to identify whether patients with idiopathic epilepsy express any specific dermatoglyphic features.

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MATERIALS AND METHOD :
The study was conducted on 50 patients (30 males 20 females) and 50 controls (32 males 18 females) in district Churu, State of Rajasthan. Patients with idiopathic epilepsy were taken and as much as possible, other diseases were ruled out. The confirmation of disease was based on clinical examination and relevant investigations. The controls were a mixed population who were free from any disease. The age of subjects were from 15-50 years.

The Indian ink method (Cumins and Midlow, 1961)[5] was used to take hand prints with camel duplicating ink. The Materials used were: a double plain paper (8.5" x 11"), a glass plate(4"x10"), a round bottle (10"x4"), a roller of spreading the ink, a table, a scale, a pointed H.B. pencil, a mercury lamp, a biological printer, a protractor, soap and ether for washing hands and a good magnifying lens.

The hands were washed with soap and water, and humidity cleaned off with ether. A small daub of camel duplicating ink squeezed out on inking slab and spread with the help of roller into a thin film for direct inking of fingers. Palm was carefully and uniformly smeared with inked roller to cover the wide area of palm to be printed for examination. The paper was set over the round bottle and the moderately open finger

and palm were successively rolled with some pressure on it permitting the bottle and paper to move forward. Roller finger prints were taken by rotation of fingers both in inking and printing to obtain complete impression of finger tips. This method enables to record the complete imprints of palm including palmar surface of all five digits in one attempt. These prints were studied with the help of a magnifying lens for observation under different heads.

OBSERVATIONS & DISCUSSION :

trfc : In this study, the mean total finger ridge count (tfrc) for control and cases of epilepsy is 128.52 and 133.90 respectively.

afrc: The mean values of absolute finger ridge count (afrc) are 172.06 and 197.76 for control and cases of epilepsy respectively.

a-b ridge count : The mean values of a b ridge count for right and left hands in control are 34.62 and 35.9 respectively, while in case of epilepsy the values are 36.88 and 39.04 respectively. These values are significant on both sides. The difference is more on left side.

atd angle : The mean 'atd angle' values in right and left hands of control are 39.14 and 39.22 respectively and in cases of epilepsy these values in right and left hands are 39.40 and 39.64 respectively.

tad angle : The mean values of 'tad angle' in right and left hands for control are 58.68 and 58.64 respectively. While in cases of epilepsy these values in right and left hands are 60 and 59.74 respectively.

tda angle : The mean values of 'tda angle' in right left hands for control are 82.08 and 82.22 respectively. While in cases of epilepsy these values in right and left hands are 80.56 and 80.60 respectively.

Distal deviation : In this study the findings of distal deviation of axial triradii are insignificant. The mean values of (D/I x100) in right and left hand of control are 15.67 and 15.41 and in cases of epilepsy 17.41 and 16.87 respectively. p value is more than 0.05. Therefore the findings are insignificant.

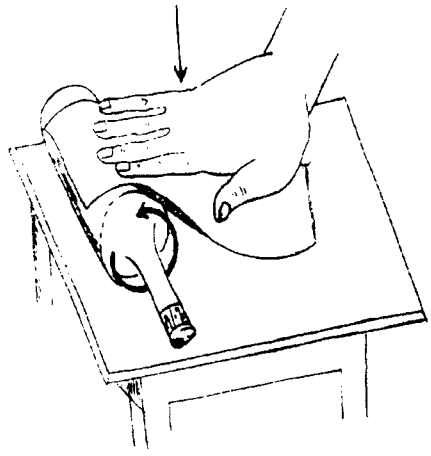
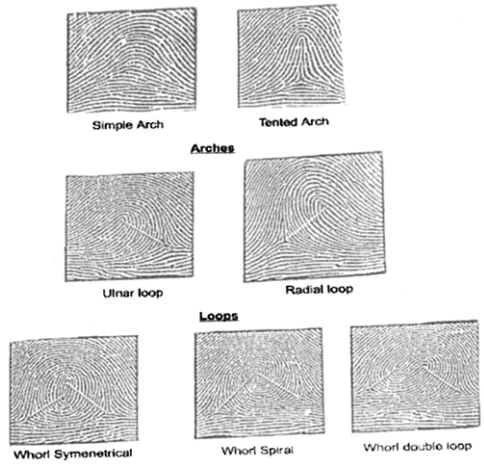


ILLUSTRATION OF THE TECHNIQUE USED IN TAKING A PRINT



Various Digital Patterns

Table No.-1 Distribution of a-b ridge count in control and epileptic patients.

a-b Ridge count	case					control				
	Rt	%	Lt	%	Total	Rt	%	Lt	%	Total
20-24	2	4.00	0	0.00	2	0	0	1	2.00	1
25-29	4	8.00	2	4.00	6	6	12.00	1	2.00	7
30-34	6	12.00	5	10.00	11	17	34.00	18	36.00	35
35-39	19	38.00	19	38.00	38	19	38.00	19	38.00	38
40-44	17	34.00	19	38.00	36	8	16.00	11	22.00	19
45-49	1	2.00	4	8.00	5	-	-	-	-	-
50+	1	2.00	1	2.00	2	-	-	-	-	-
Total	50	100.00	50	100	100	50	100.00	50	100.00	100

Table No.-2 Distribution of c-line pattern in control and epileptic patients.

C-line pattern	Case					Control				
	Rt	%	Lt	%	Total	Rt	%	Lt	%	Total
ab	3	6.00	5	10.00	8	10	20.00	19	38.00	29
px	0	0.00	1	2.00	1	3	6.00	5	10.00	8
u	13	24.00	13	26.00	25	15	30.00	16	32.00	31
r	35	70.00	26	52.00	61	22	44.00	10	32.00	32

Table No.-3 : mean ± sd of (a-b) ridge count of control and epileptic patients.

a-b ridge	Side	Mean - sd		P-value	Significance
		Case	control		
a-b	Rt	36.88±5.77	34.62±4.27	<.05	Sig.
	Lt	39.04±4.94	35.90±4.18	<.01	Sig.

Lateral deviation : Lateral deviation of axial triradii for radial and ulnar side in control is 74% and 26% respectively while in case of epilepsy lateral deviation axial triradii for radial and ulnar side is 83% and 18% respectively. The ratio of ulnar and radial lateral deviation in control is about 1:3 while in case it is about 1:5 which is significant.

C-line pattern : In this study the values of c-line is showing significant difference in control and cases of epilepsy. In control c-line pattern is absent in 29% subject but it is 8% in cases of epilepsy. The proximal pattern of c-line in control is seen in 8% subjects. While it is seen only in 1% cases of epilepsy. Ulnar type of c-line pattern is showing a little differences between control and cases. It is 32% in control and 61% in cases of epilepsy. All the values in this study are highly significant.

Palmar Pattern : Arch patterns are predominantly seen in hypothenar area of palm and it is showing a significant difference between control and cases of epilepsy. It is 79% in control and only 2% in cases. The loops are seen in all the areas of palm of controls and cases but predominantly it is seen in I3 ,I4 and hypothenar area of controls and in all areas of cases. The most significant difference for loop is seen in I4(36%) and thenar of control (1%), and in cases of epilepsy it is (60%) in I4 and (12%) in thenar area. The vestige pattern is seen only in controls and it is absolutely absent in cases of epilepsy. The whorl pattern are seen in thenar area (3%) of controls and in cases of epilepsy it is seen only in hypothenar area (2%).

Finger tip pattern : The finger tip pattern distribution in cases of epilepsy is showings lightly more number of whorls and loops than controls. The numbers of arches are more in control group and it is showing a considerable difference. Among the loops, the radial type of loops are more in number in case of epilepsy than controls. It is 13% in cases and 9% in control group. The maximum difference of radial loops is seen in IInd digit. Among the cases of whorls the number of whorls are more in control group (13.40%), especially in IInd digit than cases of epilepsy (12%). The decreasing order of whorl pattern frequency distribution in cases is IV,II, I, III, V and in controls it is IV,II, (III,V), I,. The maximum ulnar loops are seen in Vth digit, of both in cases and control. The maximum radial type of loops are seen in IInd digits of both in cases and control, but in control group it is 7% and in cases it is 11% which is showing a considerable difference. The frequency distribution of ulnar loops in cases in decreasing order is V, III, I, IV, II and in controls it is V, III, I, II, IV . There is no radial loop in digit I and V of control and in I, IV and V of cases of epilepsy. The maximum distribution of arch pattern is seen in IInd digit of both groups. In cases it is 8% and in controls is 11%.

Axial triradius : Distribution of axial triradius t in control and in cases of epilepsy is 96% and 100% respectively, and distribution of t' in controls and in cases is 12% and 10% respectively. Frequency of t" in controls and in cases of epilepsy is same that is 1%. These findings are insignificant.

CONCLUSION:

Dermatioglyphic features like ab ridge count, tfrc, afrc, atd, tad and tda angles,lateral deviation, c-line, finger ridge count and distal deviation show significant changes in patients of idiopathic epilepsy as compared to control, and the dermatoglyphic features of the present study may be used as diagnostic tool for identifying cases at risk or suffering from epilepsy.

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