Research Article

Dermatoglyphic study in grand mal epilepsy

Sumati Hiremath[1*], P S Sonone[2], N R Mudiraj[3], R B Vaidya[4]

Department of Anatomy, Bharati Vidyapeeth Deemed University Medical College and Hospital, Wanlesswadi, Sangli-416414, Maharashtra, INDIA.

Email: swamisamarathsumati2014@gmail.com

Abstract

Dermatoglyphic in epilepsy have been studied by a number of workers seens 1905. Dermatoglyphics in Grand Mal epilepsy alone have not been studied by any worker so far. 160 Grand Mal epileptic patients (80 Males and80 females from the age group 18 to 50 years) Were chosen for study As control 80 healthy males and 80 healthy females from the same age group were chosen. Palmer Dermatoglyphics of both patients and controls were recorded by standard ink method. Analysis revealed statistically significant changes as regards: 1) Radial loops 2) I4 patterns 3) ab, bc, cd, ridge counts in Grand- Mal epileptics.

Keywords: 1) Dermatoglyphics 2) Epilepsy 3) Grand –Mal epilepsy.

[*]**Address for Correspondence:**

Dr. Sumati Hiremath, Department of Anatomy, Bharati Vidyapeeth Deemed university medical college and Hospital, Wanlesswadi, Sangli-416414, Maharashtra, INDIA.

Email: swamisamarathsumati2014@gmail.com

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INTRODUCTION

Epilepsy in common language means seizure. Although variety of factors influence incidence and prevailance of seizures, approximately 5to 10 % of the normal population will have at least oneseizure during their life time. Generalized, Tonic-Clonic seizures are called Grand Mal epilepsy. It forms 10% of all the forms of epilepsy, and is the most common type of epilepsy (Harrison 2001). The neurologists agree that the disease has got a strong genetic bases and it usually runs in families.bIt is well known fact that the study of epidermal ridges and flexion creases over palms and soles – that is Dermatoglyphics also has got a strong genetic base. Therefore it is only natural that specific Dermatoglyphic patterns are found in Epilepsy.

MATERIAL AND METHOD

A total number of 160 Grand Mal epileptic patients (80 Males and80 females) from the age group 18 to 50 years were chosen form Neurology department Miraj Medical Center, Wanless Hospital Miraj, for the present study. Their palmer Dermatoglyphics were recorded using standard ink method. As control, 80 healthy males and80 healthy females from the age group 18 to 50 years were selected.

Method

The method used in the present study was Standard ink method. All prints were studied and analyzed for the following parameters (traits) Qualitative analysis

a. Fingertip patterns
b. Thenar, Hypothenar, interdigital patterns ieth/I1, I2, I3,I4 Patterns
c. Simian crease
d. Sydeny line
e. Ridge dissociation

Quantitative analysis

a. Finger ridge count
b. Total finger ridge count (TFRC)
c. 'atd' angle
d. Ridge Count of interdigital area including a-b, b-c and c-d ridge count.

The data thus collected was subjected to the following statistical test

1. Mean
2. Standard deviation (S.D)
3. 'Z' test Value
4. Fisher's Exact test.

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OBSERVATIONS

Qualitative Traits

Table 1: Percentage frequency of fingerprint patterns in Grand Mal epileptic and Normal Males

	Grand Mal Epileptic		Normal		X^2	P value	Significance
	No	%	No	%			
Whorls	269	33.62	353	41.12	62.08	0.000	Highly significance
Ulnar loop	421	52.62	403	50.31			
Radial loop	71	8.81	8	1			
Arches	39	4.86	36	4.5			

Table No.1 Shows that difference in the frequency of all patterns distribution in controls compared Grand Mal epileptic males is statically highly significant (p<0.000). This can be largely attributed to the difference in frequency of whorls, which is decrease significantly (p<0.000).The whorls are significantly less in Grand Mal epilepsy as compare to their control and Radial loop have increase markely.

Table 2: Percentage frequency of fingerprint patterns in Grand Mal epileptic and Normal Females

	Grand Mal Epileptic		Normal		X^2	P value	Significance
	No	%	No	%			
Whorls	226	33.25	247	30.87	244.769	0.000	Highly significance
Ulnar loop	283	35	479	59.87			
Radial loop	207	8.81	5	0.625			
Arches	47	5.875	69	8.625			

Table No.2 Shows that difference in the frequency of all patterns distribution in controls and Grand Mal epileptic females is statically highly significant (p<0.000).,Radial loop increased Substantially. The significance difference between proportions is mainly due to decreased ulnar loop and arches which is highly significant. The arches are significantly less in grand mal epilepsy as compare to their controls.

Table 3: Frequency distribution of patterns in Thenar, HYpothenar and interdigital areas of Right hand of Grand Mal epileptic and Normal Males

Palmar Area	Subject	Presence of pattern	%	Absence of pattern	%	X^2	P Value	Significance
Th/I-1	GE	2	2.5	78	97.5	0.256	0.613	Not significant
	Normal	2	2.5	78	97.5			
I-2	GE	5	6.25	75	93.75	1.77	0.278	Not significant
	Normal	10	12.5	70	87.5			
I-3	GE	39	48.75	41	51.25	0.213	0.645	Not significant
	Normal	36	45	44	55			
I-4	GE	23	28	57	71	12.316	0.000	Highly significant
	Normal	51	63.75	39	48.75			
Hy	GE	12	15	68	85	0.655	0.418	Not significant
	Normal	15	18	55	0.655			

Table No. 3There is decrease in frequency of in I4 patterns of right hand in grand mal epileptic males as compared to controls their controls. This difference is statically highly significant (P<0.01)

Table 4: Frequency distribution of patterns in Thenar, HYpothenar and interdigital areas of left hand of Grand Mal epileptic males and Normal Males

Palmar Area	Subject	Presence of pattern	%	Absence of Pattern	%	X^2	P Value	Significance
Th/I-1	GE	2	2.5	78	90	0.514	0.473	Not significant
	Normal	2	2.5	78	85			
I-2	GE	5	6.25	75	96.25	7.574	0.006	Highly significant
	Normal	10	12.5	70	81.25			
I-3	GE	39	48.75	41	72.5	0.268	0.605	Not significant
	Normal	36	45	44	67.5			
I-4	GE	23	28	57	71.25	8.395	0.004	Highly significant
	Normal	51	63.75	39	47.5			
Hy	GE	12	15	68	92.5	0.09	0.764	Not significant
	Normal	15	18	55	92.5			

Table No. 4 it is clear that percentage of frequency of presence of patterns in Th/I1 I2I4is lower in grand mal epileptic males compare to control males. There is decrease in frequency of presence in I4 patterns of left hand in grand mal epileptic males as compared to controls their controls. This difference is statically highly significant (P<0.01)

Table 5: Sex –wise distribution of Ridge Dissociation of in Grand Mal epileptic and Normal Females

Sex	Subject	Right hand	Left hand	X^2	P value	Significance
Male	GE	15	15	0.015	0.902	Not.sig.
	Normal	13	12			
female	GE	13	13	Fisher's exact test P=1.00		significant
	Normal	1	1			

Table No.5 Shows increased occurrence of ridge dissociation in grand mal epilepsy in both hands in females as compared to their controls. But these differences are not statically significant in male and it is significant in female.

Quantitative traits

Table 6: Mean atd angle (in degree) in grand mal epileptic and normal Males

Hand	Grand Mal Epileptic		Normal		Z Value	P value	Significance
	X	S.D	X	S.D			
Right	43.7	60.1	41.55	3.90	2.684	0.008	Hig.significant
Left	44.07	5.42	42	3.920	2.768	0.006	Hig.significant

Table No.6Shows that values of mean 'atd' angle of both hands is increased in grand mal epilepsy males as compared to that of the controls. These differences are statistically highly significant. (P<0.05)

Table 7: Mean 'atd' angle (in degree) in grand mal epileptic and normal Females

Hand	Grand Mal Epileptic		Normal		Z Value	P value	Significance
	X	S.D	X	S.D			
Right	43.114	5.267	42.7	4.574	0.531	0.596	Not sig
Left	44.36	5.68	42.9	4.52	1.881	0.062	Not sig

Table No.7 Table No.6Shows that values of mean 'atd' angle of both hands is Slightly higher in grand mal epileptic females as compared to that of the controls. But these differences are not statistically significant. (P<0.05)

Table 8: Mean 'a-b' Ridge count in grand mal epileptic and normal subjects

Hand	Sex	Grand Mal Epileptic		Z Value	P value	Significance
		X(S.D)	X(S.D)			
Right	Male	35.71(5.71)	38.33(5.44)	2.971	0.003	Hig.significant
	Female	32.72(5.67)	41.4(5.12)	8.9920	0.000	Hig.significant
Left	Male	35.88(6.43)	40.48(5.685)	5.368	0.000	Hig.significant
	Female	34.51(5.994)	42.85(5.37)	9.273	0.000	Hig.significant

From above Table No.12 It is clear that mean a-b' Ridge count is reduced of both hands is in grand mal epileptic male and females as compared to that of the controls. Which is statistically highly significant. (P<0.00)

Table 9: Mean 'b-c' Ridge count in grand mal epileptic and normal subjects

Hand	Sex	Grand Mal Epileptic		Z Value	P value	Significance
		X(S.D)	X(S.D)			
Right	Male	23.80(6.052)	27.81(5.71)	4.311	0.000	Hig.significant
	Female	23.107(3.952)	27.66(5.12)	6.296	0.000	Hig.significant
Left	Male	24.82(4.32)	27.17(5.44)	3.026	0.003	Hig.significant
	Female	22.8 (5.08)	27.39(5.27)	5.609	0.000	Hig.significant

From above Table No.9 It is clear that mean 'b-c' Ridge count is reduced of both hands is in grand mal epileptic male and females as compared to that of the controls. This is statistically highly significant. (P<0.00)

Table 10: Mean 'c-d' Ridge count in grand mal epileptic and normal subjects.

Hand	Sex	Grand Mal Epileptic		Z Value	P value	Significance
		X(S.D)	X(S.D)			
Right	Male	33.514(4.257)	36.65(5.33)	4.133	0.000	Hig.significant
	Female	31.3(6.59)	37.82(5.14)	6.978	0.000	Hig.significant
Left	Male	33.56(7.37)	35.20(7.05)	1.438	0.152	Hig.significant
	Female	31.33(5.108)	38.64(5.27)	8.907	0.000	Hig.significant

From above Table No.10 It is clear that mean 'c-d' Ridge count is reduced of both hands is in grand mal epileptic male and females as compared to that of the controls. Which is statistically highly significant.(P<0.00)

DISCUSSION

From the above tables, following important observations can be made

a) Qualitative traits

1. Patterns on terminal Phalanx – increase in the frequency of Radial loops was seen in Grand – Mal epilepsy males and females. In normal population, the digit which shows commonly radial loop is index finger. Here radial loop were found in other digits as well. This finding is very important.
2. I4 patterns frequency was statistically significantly reduced on right and left palms of Grand-Mal epilepsy males only.
3. Increased frequency of ridge dissociation was seen on both right and left palms of Grand-Mal epilepsy females only.

b) Quantitative traits

1. Mean 'atd' angle was found to have increased in both hands of epileptics males This means axial tri-radius 't' is displaced distally. ''atd'' angle progressively increases assuming t',t'' positions with severity of genetic abnormality.
2. 'a-b',' b-c',' c-d' ridge count on both hands of both the sexes in epileptics were reduced as compared to controls. This difference is statistically highly significant.

This means that either

a. Distal part of palm is narrower in both males and females epileptic or

b. The ridge intensity in the distal part of the palm is less. Or both.

In view of lack of published information on dermatoglyphics in grand mal epilepsy, observations of this investigation could not be appropriately discussed. It is felt that many more workers will come out with research work on this specific project and sufficient a data will accumulate, so as to predict proclivity of an individual to develop Grand mal epilepsy.

SUMMARY AND CONCLUSION

160 Grand Mal epileptic patients (80 Males, 80 females) from Neurology department Miraj Medical Center, Wanless Hospital Miraj, were selected for the present study. These patients were from age group 18 to 50 years identical number of healthy males and females, from any major illness were used as controls

From the observations it can be concluded that –

1. Presence of Radial loop/s found on finger other than index finger.
2. Increased 'atd' angle
3. Reduced a-b, b-c, c-d Ridge count/s either singly or together should make one think of possible Grand-Mal Epileptic triat.

However it must be mentioned that further studies in Dermatoglyphic Grand-Mal Epileptic are essential before one can draw such conclusion it is felt that many more workers will come out with research work on this specific type of epilepsy and sufficient data will accumulate so as to predict proclivity of an individual to develop Grand-Mal Epilepsy.

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