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Original Research Article

A study of the dermatoglyphic pattern in essential hypertension subjects in Kalaburagi test

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ABSTRACT

Background and Objectives: Dermatoglyphics sterms from the ancient art of palmistry, which was practiced from time immemorial and is still followed throughout India by the Joshi caste. There appears to exist an extremely old volume, on the markings on the hands possessed and treasured by the Hindus. From here, this art has spread throughout the world.
Essential hypertension is the category of hypertension that has no identifiable cause, it is associated with aging and inherited genetic factors. Positive family history increases the risk. Dermatoglyphic patterns are genetically determined and can be used as supportive for diagnosis of various hereditary disorders including essential hypertension. This study was carried out to compare palmar dermatoglyphic pattern in, essential hypertension and control group and compare with previous studies.
Method: A hospital based case control study was conducted 100 essential hypertensive patients are taken from Basaweshwar hospital Gulbarga, and another 100 persons are included as control group. The palms and fingers are smeared with ink to bring out the dermatoglyphiic patterns which were subsequently studied.
Result: There was increased number of whorls and decreased number of ulnar loops in essential hypertensive patients compared with normal individuals. Total finger ridge count and Absolute finger ridge count is increased in Essential hypertension patients and there is also increased atd angle.
Conclusion: The knowledge of dermatoglyphics in patients with essential hypertension can be utilized to find out genetic correlation. The existence of such relation might be important for the screening programme for prevention of essential hypertension.

1. Introduction

Dermatoglyphics can be traced back to 1892 when one of the most original biologists of his time Sir Francis Galton, a cousin of Charles Darwin, published his work on fingerprints (The study was later on termed as dermatoglyphics by Dr. Horald Cummins).[1]

From cradle to grave, 'Hastarika' the science of palmistry, is a legacy bequeathed to humanity by ancient seers and saint of India. The roots of this science can be traced to the Ancient East-according to kunagusu Minakatas notes in nature. Chinese records mention the use of fingerprint is very ancient times of India. Ancient system of Indian palmistry called 'Samudrik Mudr' classified ridge patterns into padma (lotus) Sankha (conch shell) and chakra(wheel).These objects are also found expressed on the palms, soles and digits of the sculptured images of lord Buddha, which is In Indian museum at Calcutta. Bidloo provided a description of ridge detail in the seventeenth century. Since then, additional information have been added by anthropologist, biologists, geneticists, and anatomists.[2]

During the last century, the fact that each individuals ridge confirmation are unique has seen utilized as a means of personal identification especially by law enforcement

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officials widespread medical interest in epidermal ridges developed only in the last few decades when it became apparent that many patients with chromosomal abbreviation had unusual patterns. Inspection of skin ridges therefore promise to provide a simple, inexpensive means of information to determine whether a given patient could have a particular chromosomal defect. Geneticists were able to demonstrate that inheritance of dermal ridge configuration depended on multiple gene effect.[3]

There are many diseases known to be caused by abnormal genes. Whenever there is any abnormality in the genetic makeup of parents, it is inherited to the children and is reflected in dermatoglyphic pattern.[4]

2. Materials and Methods

2.1. Source of data

The present study is conducted in patients of essential hypertension attending outpatient department (O.P.D.) of HKE Society's Basaveshwar Teaching and general Hospital, attached to M.R. Medical College Kalaburagi and controls were matched (age and sex).

2.2. Materials used

1. Camel black ink
2. Stamp pad
3. Bond paper
4. Magnifying lens (x5)
5. Protractor
6. Pencil and pen

2.3. Sampling procedure

Informed consent will be taken from the subjects in a prescribed format. Cummins method was used for the finger prints. Patients will be asked to wash their hands with soap and water. So as to remove any oil or dirt after that, 10 fingers are pressed upon stamp pad and impressed on a white duplicating paper, subject were asked to roll their fingers from one side of the nail to another to allow for better clarity of the impression. This was the screened with the aid of magnifying lens (5x).

2.4. Inclusion criteria

Clinically diagnosed cases of essential hypertension.

2.5. Exclusion criteria

1. Any deformities of finger, palm and infected hand.
2. Diseases causing secondary hypertension.
3. Chromosoaml abnormalities like klinefelter's syndrome, Turner's syndrome etc.
4. Deep burns of fingers and palms leading to scars.

2.6. Sample

For this study 100 patients of essential hypertension are taken from Basaveshwar Teaching and general hospital at Kalaburagi and 100 normal subjects are taken after age and sex match with the cases.

The analysis include finger print pattern and also total finger ridge count a-b- ridge count and atd angle.

2.7. Statistical analysis

In the study statistical data analyzed by SPSS 16.0 version software for quantitative data analysis, mean and Standard Deviation were calculated and for significant unpaired t-test was applied $p < 0.05$ was considered as significant.

Ink was applied to palmar region of patients hand from the stamp pad and the patient was asked to press their hands on bond paper one by one and hands were pressed the observer from above and make sure that clear prints have obtained and patient is asked to lift their hands gently.

3. Results

No statistical significant difference of all palmer dermatoglyphic patterns between right and left in control group.($P>0.05$)

No statistical significant difference of all palmer dermatoglyphic patterns between right and left in Hypertension group. ($P>0.05$).

There is statistical significant difference in right palmer dermatoglyphic patterns of UL, WHORL, ATD. Between hypertension group and control group. There is no statistical significant difference in right palmer dermatoglyphic patterns of RL, ARCH, A-B R. between hypertension group and control group. Mean UL is significantly lower in Hypertension group as compare to control group and Mean WHORL and ATD values are significantly higher in Hypertension group as compare to control group.

There is statistical significant difference in left palmer dermatoglyphic patterns of UL, WHORL, ATD. Between hypertension group and control group. There is no statistical significant difference in left palmer dermatoglyphic patterns of RL, ARCH, A-B R. between hypertension group and control group. Mean UL is significantly lower in Hypertension group as compare to control group and Mean WHORL and ATD values are significantly higher in hypertension group as compare to control group.

There is statistical very highly significant difference in palmer dermatoglyphic patterns of TFRC and AFRC Between hypertension group and control group. Mean TFRC and AFRC values are significantly higher in Hypertension group as compare to control group.

Table 1: Comparison of palmer dermatoglyphic pattern of right and left in control group

Dermatoglyphic pattern	Right MEAN ± SD	Left MEAN ± SD	T- test value	P-value & significance
UL	2.63 ± 1.29	2.65 ± 1.38	t = 0.106	P=0.916, NS
RL	0.05 ± 0.22	0.07 ± 0.25	t =0.593	P=0.554, NS
WHORL	2.07 ± 1.41	1.94 ± 1.57	t =0.616	P=0.538, NS
ARCH	0.25 ± 0.59	0.28 ± 0.62	t =0.35	P=0.727, NS
ATD	37.9 ± 3.58	37.94± 3.53	t =0.079	P=0.937, NS
A-B RC	28.20 ± 4.27	28.8 ± 4.31	t =1.01	P=0.273, NS

Table 2: Comparison of palmer dermatoglyphic pattern of right and left in hypertension group

Dermatoglyphic pattern	Right MEAN ± SD	Left MEAN ± SD	T- test value	P-value & significance
UL	1.55 ± 1.27	1.58 ± 1.28	t = 0.166	P=0.869, NS
RL	0.03 ± 0.17	0.03 ± 0.17	t =0.00	P=1.00, NS
WHORL	3.13 ± 1.49	3.11 ± 1.48	t =0.094	P=0.924, NS
ARCH	0.29 ± 0.78	0.23 ± 0.54	t =0.628	P=0.531, NS
ATD	39.33 ± 3.83	39.92 ± 3.65	t =0.770	P=0.440, NS
A-B R	28.19 ± 3.56	27.95 ± 3.66	t =0.469	P=0.639, NS

Table 3: Comparison of right palmer dermatoglyphic pattern between hypertension group and control group

Dermatoglyphic pattern	Hypertension group MEAN ± SD	Control group MEAN ± SD	T-test value	P-value & significance
UL	1.55 ± 1.27	2.63 ± 1.29	t = 5.95	P=0.00, HS
RL	0.03 ± 0.17	0.05 ± 0.22	t =0.719	P=0.431, NS
WHORL	3.13 ± 1.49	2.07 ± 1.41	t =5.16	P=0.00, HS
ARCH	0.29 ± 0.78	0.25 ± 0.59	t =0.408	P=0.642, NS
ATD	39.33 ± 3.83	37.9 ± 3.58	t =2.72	P=0.01, S
A-B R	28.19 ± 3.56	28.20 ± 4.27	t =0.018	P=0.986, NS

Table 4: Comparison of left palmer dermatoglyphic pattern between hypertension group and control group

Dermatoglyphic Pattern	Hypertension group MEAN ± SD	Control group MEAN ± SD	t- test value	P-Value & Significance
UL	1.58 ± 1.28	2.65 ± 1.38	t = 6.03	P=0.00, HS
RL	0.03 ± 0.17	0.07 ± 0.25	t =1.16	P=0.214, NS
WHORL	3.11 ± 1.48	1.94 ± 1.57	t = 5.97	P=0.00, HS
ARCH	0.23 ± 0.54	0.28 ± 0.62	t =0.511	P=0.575, NS
ATD	39.92 ± 3.65	37.94± 3.53	t =2.84	P=0.01, S
A-B R	27.95 ± 3.66	28.8 ± 4.31	t =1.073	P=0.284, NS

Table 5: Comparison of palmer dermatoglyphic pattern between hypertension group and control group

Dermatoglyphi c pattern	Hypertension Group MEAN ± SD	Control Group MEAN ± SD	t- test value	P-value & significance
TFRC	118.42 ± 26.04	108.64 ± 22.6	t =17.69	P=0.000, VHS
AFRC	246.01 ± 44.40	236.05 ± 35.74	t =38.6	P=0.000, VHS

4. Discussion

The association of altered dermatoglyphics pattern with essential HTN was well-known as reported by several workers. In this section attempt is made to compare the observation seen in our study with previous studies conducted to compare dermatoglyphics pattern is essential HTN.

4.1. Finger tip pattern

The present study showed increased number of whorls and decreased number of unlar loop in patients with essential HTN which is correlating with studies conducted by Tafazoli et al[4] and Deepa G et al.[5]

Table 6: Comparsion of finger print pattern in essential HTN

Name of the study	UL	RL	Whorl	Arches
Present study (2016)	-*	X	+*	X
Tafazoli et al (2013)	-*	X	+*	X
Deepa G et al (2013)	-*	x	+*	X

4.2. atd angle

In present study 'atd' angle is increased which is comparable with preview studies, Polat HM et al[6] and Palyzova D et al[7]

Table 7:

Study	Increased 'atd' angle	
	Right	Left
Present study (2016)	Increased	Increased
Polat HM et al (1999)	Increased	Increased
Palyzova D et al (1991)	Increased	Increased

Table 8: ComparisonofTFRCandAFRCindifferent studies

Study	TRRC	AFRC
Present study (2016)	Increased	Increased
Polat MH et al (1999)	Increased	Increased
Palyzova D et al (1991)	Increased	Increased

Total finger ridge count (TFRC) and Absolute finger ridge count (AFRC).

In present study TFRC and AFRC and increased as comparable to preview studies like Polat HM et al.[6] Palyzova D et al.[7]

5. Conclusion

Several hypothesis have been formulated concerning the forces that are responsible for the development of specific ridge patterns. It was speculated that the dermal ridge configurations were the result of physical and topographic growth forces.[8]

Hence the resulting ridge configuration are genetically determined and influenced by prenatal insult during the period of formation of these ridges, which can be studied by method of dermatoglyphics. Thus dermatoglyphics is helpful as a diagnostic aid in diseases which have a strong genetic background such as essential hypertension.

Dermatoglyphics are studied in 100 essential hyp[ertension patients from Basaweshwar teaching and general Hospital Gulbarga.

Increased numbers of whorls and decreased number of ulnar loops are seen in essential hypertension patients. Total finger ridge count and Absolute finger ridge count are increased in essential hypertension patients.

Thus dermatoglyphics pattern may provide a means of identifying the genetically determined fraction of patients of disease like Essential hypertension and can be used for screening and may also have some diagnostic value.

6. Recommendations

The study of dermatoglyphic of essential hypertension patients with relation to dermatoglyphics of their parents would throw further light on the relationship between genetic influence on the causation of essential hypertension with dermatoglyphic.

7. Conflict of Interest

None.

8. Source of Funding

None.

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