Research Article

A study of qualitative dermatoglyphics in patients suffering from essential hypertension

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Abstract

Aims and Objective: To compare the dermatoglyphics in patients suffering from essential hypertension with that of normal persons. **Introduction:** Dermatoglyphics is a branch of genetic dealing with the skin ridge system**.** Through the years of research dermatoglyphics has immerged as a powerful tool in the diagnosis of psychological, medical and genetic condition. Diagnosis of Diabetes Mellitus Schizophernia, Hypertensionetc can now be aided by dermatoglyphicanalysis**.** This study is undertaken because the dermatoglyphics and essential hypertension both have Genetic basis. **Methodology:** The present study was carried out in 60 patients of essential hypertension and 60 normal individuals in Medical College and normal individuals were obtained from Master colony, and the study variables were analyzed using ***Chi-Square*** test. **Result:** The presence of arches is more in Patients as compared to Controls but this is not statistically significant (X^2 = 0.06 P>0.05).The overall percentage frequency of Radial Loops were more in Patients as compared to controls but this difference was not statistically significant (χ^2=2.69; df = 2; P>0.05).The overall percentage and frequency of Ulnar Loops were less in Patients as compared to controls which is statistically significant (χ^2=15.47; df=2; P<0.05).The overall Frequency and percentage of whorls were more in Patients as compared to controls which is not significant (χ^2=2.37; df=2; P>0.05). **Conclusion**: Ulnar loop frequency showed significant decrease in patients of essential hypertension as compared to controls.

Keywords: Essential hypertension, Palmar Dermatoglypics.

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INTRODUCTION

Study of palmer dermatoglyphics is used for fortune telling by palmist since ages is a well-known fact. Essential hypertension is the category of hypertension that has no identifiable cause. It affects 90-95% of hypertensive patients. It is also associated with ageing and inherited genetic factors. Positive family history enhances the risk. Dermatoglyphics, the study of specific patterns of epidermal ridges in the palms and soles, is an unique and stable marker of identity, established in utero. Development of those ridges is regulated by genetic and environmental influences. As there is increased risk of hypertension in individuals with family history because of genetic factors, the study of co-relation between dermatoglyphics and hypertension can help in early identification of people with the genetic predisposition to develop essential hypertension[1] Diagnosis of Diabetes Mellitus[2] Schizophernia[3], Hypertension[4] etc. can now be aided by dermatoglyphic analysis**.** Twin studies have shown that genetic factors play an important role in the pathogenesis of essential hypertension[5] Dermatoglyphics helps in the early detection of cases of essential hypertension[6]. We have undertaken this study because It is well recognized that hypertension is now a major health problem in India[7,] the dermatoglyphics and essential hypertension both have Genetic etiology. Study of Dermatoglyphics is a non-invasive and cost effective

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method. Since other laboratory procedure for hereditary disease are expensive, Dermatoglyphics with other clinical signs can be used to define indications for other laboratory procedure.

MATERIAL AND METHODS

The present study was carried out in 60 patients of essential hypertension and 60 normal individuals. The patients of essential hypertension were collected from Department of Medicine ABC Medical College attending the medicine OPD and patients admitted in the medicine ward. The prints of normal individuals were obtained from Master colony, and A detail clinical history was recorded regarding the age, sex, duration of hypertension, drug history, complete general and systemic examination including pulse, blood pressure, Respiratory system, Cardiovascular system, Central nervous system and relevant investigations including blood sugar, blood urea, serum creatinine, serum cholesterol, urine sugar, urine albumin.

Inclusion Criteria

The studied cases comprise of newly detected and old cases of essential hypertension reporting the medicine OPD and ward, AVBRH Hospital Sawangi Meghe, Wardha.

Exclusion Criteria

Patients with secondary hypertension were excluded, History of smoking, Diabetes Mellitus, Ischemic Heart Disease, Serum cholesterol > 200 mg/dl, Pregnancy, Fever.

Criteria for selection of controls

60 age and sex matched healthy, non-hypertensive individuals without any of the above mentioned exclusion criteria and with normal clinical examination were chosen as controls.

Data Collection

Structured format for details of subjects, Dermatoglyphic prints of both hands of each subject

Method

Dermatoglyphic prints were obtained using ink method described by **Cummins and Midlo (1961)**[8] modified Purvis Smith method was applied[9,10].

RESULTS

Table 1: Range with number and percentage frequency of arches in right and left hand of both groups

Range of Arches	Right Hand		Left Hand		Total (R + L)	
	Patient	Control	Patient	Control	Patient	Control
0 – 1	56 (93.3)	54 (90.0)	54 (90.0)	58 (96.7)	110 (91.7)	112 (93.3)
1 – 2	4 (6.7)	6 (10.0)	6 (10.0)	2 (3.3)	10 (8.3)	8 (6.7)
2 +	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

(In Right hand: χ^2 = 0.11; df = 1; P > 0.05,In Left hand: χ^2= 1.21; df = 1; P>0.05, Total: X^2 = 0.06 P>0.05)

The above Table No.1 shows the range with number percentage frequency of **Arches** in **Right Hand**, within range (0-1) were 56 (93.3%) and 54(90.0%) and In (1-2) Range were 4(6.7%) and 6(10.0%) in patients and controls respectively , this difference is not statistically significant (χ^2=0.11 , P> 0.05) while in **Left hand** within range (0-1) 54(90.0%) and 58 (96.7%) and in (1-2) range were 6 (10.0%) and 2 (3.3%) in patients and control respectively this observed difference was also not significant (χ^2=0.06,P> 0.06).

Table 2: Range with number and percentage frequency of radial loops in right and left hand of both groups

Range of Radial Loops	Right Hand		Left Hand		Total (R + L)	
	Patient	Control	Patient	Control	Patient	Control
0 – 1	55 (91.7)	52 (86.7)	53 (88.4)	54 (90.0)	108 (90.0)	106 (88.3)
1 – 2	5 (8.3)	8 (13.3)	5 (8.3)	6 (10.0)	10 (8.3)	14 (11.7)
2 +	0 (0.00)	0 (0.00)	2 (3.3)	0 (0.00)	2 (1.7)	0 (0.00)

(In Right hand: χ^2= 0.35; P>0.05 , In Left hand: χ^2= 2; df = 2;P>0.05,Total: χ^2 = 2.69;df= 2; P>0.05)

The above Table No.5 shows the range with number percentage frequency of **Radial loops** in **Right Hand** within range (0-1) 55 (91.7%) and 52 (86.7%) and in range (1-2) were 5(8.3%) and 8 (13.3%) respectively in patients and controls which was not statistically significant (χ^2=0.35,P>0.05) where as in **Left Hand** in the range (0-1) 53 (88.4%) and 54 (90.0%) and in Range (1-2) 5 (8.3%) and 6(10.0%) and in range (2+) 2(3.3) and 0(0.0%) respectively in patients and control which is not significant (χ^2=2,df=2 P>0.05).The overall percentage frequency of Radial Loops were more in Patients as compared to controls; (0-1) Range 108 (90.0%) and 106 (88.3%),(1-2) range10 (8.3%) and 14 (11.7%),(2+) Range 2 (1.7%) and 0 (0.00) Respectively but difference was not statistically significant (X^2=2.69; df=2; P>0.05)

Table 3: Range with number and percentage frequency of ulnar loops in right and left hand of both groups

Range of Ulnar Loops	Right Hand		Left Hand		Total (R + L)	
	Patient	Control	Patient	Control	Patient	Control
0 – 1	8 (13.3)	10 (16.7)	18 (30.0)	10 (16.7)	26 (21.7)	20 (16.7)
1 – 2	9 (15.0)	2 (3.3)	12 (20.0)	2 (3.3)	21 (17.5)	4 (3.3)
2 +	43 (71.7)	48 (80.0)	30 (50.0)	48 (80.0)	73 (60.8)	96 (80.0)

(In Right hand: χ^2 = 4.95; df = 2; P<0.05, In Left hand: χ^2 = 13.58; df = 2; P<0.001, Total: χ^2 = 15.47; df = 2; P<0.05)

From the above Table No.3The range with number percentage frequency of Ulanar loops in Right Hand within range (0-1) 8 (13.3) and 10(16.7%) and In range (1-2) 9 (15.0%) and 2 (3.3%) and in range (2+) 43(71.1%) and 48 (80.0%) respectively in patients and controls .this observed difference is not significant (χ^2=4.95, df=2, P>0.05) where as in Left hand in Range of(0-1) 18 (30.0%) and 10(16.7%) and in range (1-2) 12(20.6%) and 2 (3.3%) and in range of (2+) 30 (50%) and 48 (80.0%) respectively in patients and control this observed difference is statistically significant. (χ^2=13.58, df=2 P<0.05). The overall percentage and frequency Ulnar Loops were less in Patients as compared to controls;In Range (0-1) 26 (21.7)and 20 (16.7),in (0-2) 21 (17.5) and 4 (3.3) and in Range (2+) 73 (60.8) and 96 (80.0) respectively which is stastically significant.
(Total: χ^2=15.47; df =2; P<0.05)

Table 4: Range with number and percentage frequency of whorls in right and left hand of both groups

Range of Whorls	Right Hand		Left Hand		Total (R + L)	
	Patient	Control	Patient	Control	Patient	Control
0 – 1	33 (55.0)	32 (53.3)	31 (51.7)	34 (56.7)	64 (53.3)	66 (55.0)
1 – 2	13 (21.7)	18 (30.0)	6 (10.0)	8 (13.3)	18 (15.8)	26 (21.7)
2 +	14 (23.3)	10 (16.7)	23 (38.3)	18 (30.0)	37 (30.9)	28 (23.3)

(In Right hand: χ^2 = 1.49; df = 2; P> 0.05, In Left hand: χ^2 = 1.03; df = 2; P>0.05, Total: χ^2 = 2.37; df = 2; P>0.05)

Above Table No.4 The range with number percentage frequency of Whorls in Right hand in range of (0-1) 33(55.0) and 32 (53.3%) and in range of (1-2) 13(21.7%) and 18 (30.0%) and in range of (2+) 14 (23.3) and 10 (16.7%) respectively in patients and control which is not significant (χ^2=1.49, df=2, P>0.05). Left hand within range (0-1) 31 (51.7%) and 34 (56.7%) and in range (1-2) 6 (10.0%) and 8(13.3%) and in range (2+) 23 (38.3%) and 18 (30.0%) respectively in patients and controls which is not significant (χ^2=2.37, df=2, P>0.05). The overall Frequency and percentage of whorls were more in Patients as compared to controls; in range (0-1) 64 (53.3%) and 66 (55.0) and in (0-2) 18 (15.8%) and 26 (21.7%) and in (2+) 37 (30.9) and 28 (23.3) Respectively but this observed difference is not significant.
(Total: χ^2=2.37; df = 2; P>0.05)

CONCLUSION

Ulnar loop frequency showed significant decrease in patients of essential hypertension as compared to controls.

DISCUSSION

The presence of arches is more in Patients as compared to Controls but this is not statistically significant. This finding is confirmative with Rudragouda S Bulagouda *et al* (2013)[3], Arista Lahiri *et al* (2013)[4], They observed arches percentage in Hypertensive 4.57% and 5.79% respectively but those are just 0.44% and 1.33% in normotensives. The overall percentage frequency of Radial Loops were more in Patients as compared to controls but this difference was not statistically significant this is in confirmation with Rudragouda S Bulagouda *et al* (2013)[3] they observed Right hand and left hand of the both male and female study group showed more number of Radial loops than controls and not in confirmation with Arista Lahiri *et al* (2013)[4] they observed The Radial Loop pattern is ho significantly less in incidence in hypertensive group. The overall percentage and frequency of Ulnar Loops were less in Patients as compared to controls which is statistically significant this is in confirmation with Rudragouda S Bulagouda *et al* (2013)[5] they observed Right hand and left hand of the both male and female study group showed more number of Ulnar loops than controls. Pursnani ML, Elhence GP, Tibrewala L (1989)[11] in their study observed that Number and frequency percentage of finger tip pattern in patient was lower than control group (Ulnar loops) which is statistically significant. Present study co-relates with the above study. The overall Frequency and percentage of whorls were more in Patients as compared to controls which is not significant, this study is not in confirmation with Rudragouda S Bulagouda *et al* (2013)[5] They observed The right hand and left hand of the male control group showed more number of Whorls than study, while in females, the right hand study group showed more number of whorls than control group and the left hand

study group showed less number of Whorls as compared to control group.

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