

**STUDY OF DERMATOGLYPHICS IN YOUNG HYPERTENSIVES VISITING A
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ABSTRACT

Hypertension is a major contributor to the global burden of the disease and mortality. First evidence of shift in epidemiology of childhood hypertension was seen in 2004 analysis NHANES (National Health and Nutrition Examination Survey) data in USA. Results of NHANES survey demonstrated overall blood pressure levels in children and adolescents have increased over the past decade. Dermatoglyphics (Greek derma = "skin", glyph = "carving") is the scientific study of fingerprints. A fingerprint is an impression of the friction ridges of all or any part of the finger.^[5] Dermatoglyphics is one such investigation, which is very cheap, non-invasive, easy and can "predict" possible future illness. This new field of interpretation of fingerprints may predict the occurrence of disease and its complications. Considering these possibilities, the present study is undertaken to study the fingerprint pattern in young hypertensive patients visiting a tertiary care hospital. Results showed predominant pattern among young hypertensives was loops (66.7%) followed by whorls (26.7%). Female hypertensives had an increased frequency of loops (66.7%), and males had an increased frequency of whorls (26.7%) when compared to normal population.

KEYWORDS: Young hypertensives, Dermatoglyphics, Loops.**INTRODUCTION**

Hypertension (HTN) is a chronic medical condition in which the systemic arterial blood pressure is elevated above the normal range than expected in a particular age group.^[1] Hypertension generally is defined as value greater than or equal to 140 mmHg systolic blood pressure and/or greater than or equal to 90 mmHg diastolic blood pressure.^[1] Hypertension is a major contributor for global mortality². It is estimated that approximately 40% of adults aged >25 years had been hypertensive.^[3]

First evidence of shift in epidemiology of childhood hypertension was seen in 2004 analysis NHANES (National Health and Nutrition Examination Survey) data in USA. Results of NHANES survey demonstrated overall blood pressure levels in children and adolescents have increased over the past decade.^[4]

Hypertension is classified as either primary (essential) or secondary. About 90–95% of cases are termed "primary hypertension", which refers to high blood pressure for which no medical cause can be found. The remaining 5–10% of cases (Secondary hypertension) are caused by

other conditions that affect the kidneys, arteries, heart or endocrine system.

Dermatoglyphics (Greek derma = "skin", glyph = "carving") is the scientific study of fingerprints. A fingerprint is an impression of the friction ridges of all or any part of the finger.^[5] A friction ridge is a raised portion of the epidermis on the palmar skin, digits, or plantar skin, consisting of one or more connected ridge units of friction ridge skin.^[5]

Dermatoglyphic traits are formed under genetic control early during development and do not change thereafter, thus maintaining stability, not affected by age.^[6] There are 3 types of fingerprints: Loops, Whorls and Arches. They constitute 66-67%, 23-25% and 6-7% percent of all fingerprint patterns respectively. These patterns may represent the genetic makeup of an individual and his/her predisposition to certain diseases³. Considerable progress has been made in understanding the association between dermatoglyphics and various medical disorders, as a result of which dermatoglyphic analysis has been established as a useful diagnostic and research tool in medicine.

Dermatoglyphics is one such investigation, which is very cheap, non-invasive, easy and can “predict” possible future illness. Prevention is better than cure; as the saying goes, this new field of interpretation of fingerprints may predict the occurrence of disease and its complications. Considering these possibilities, the present study is undertaken to make an effort to decrease the number of victims falling prey to hypertension and its complications.

AIMS AND OBJECTIVES

To study the fingerprint pattern in young hypertensive patients visiting a tertiary care hospital, South India.

OBJECTIVES

1. To know the most common fingerprint pattern in young hypertensive patients.
2. To observe any significant variations in the fingerprint pattern in young hypertensive patients.
3. To determine whether the fingerprint pattern is a sensitive predictor of hypertension.

MATERIALS AND METHODS

- **Study design:** Cross sectional study
- **Study setting:** Tertiary care hospital.
- **Study period:** 2 months
- **Sample size:** 60
- **Inclusion criteria for cases:** Young patients (below 40 years) suffering from primary hypertension.

Exclusion criteria for cases

1. Hypertensives above 40 years
2. Patients with secondary hypertension

METHODOLOGY

After obtaining an informed consent from the patients, Data collection was done by taking fingerprints from the patients and filling up of proforma.

Data will be entered into Microsoft excel data sheet and will be analyzed using SPSS 22 version software. Categorical data will be represented in the form of Frequencies and proportions. Chi-square will be the test of significance. Continuous data will be represented as mean and standard deviation. Independent t test will be the test of significance to identify the mean difference between two groups. p value <0.05 was considered as statistically.

RESULTS

Table: 1 Comparison of fingerprint pattern to BMI, BP and Pulse.

	Finger Print Pattern	Number of patient	Mean	Standard Deviation
BMI	Whorls	16	22.4750	1.74069
	Loops	40	22.4600	3.14649
	Arches	4	20.7500	1.26095
Systolic Blood Pressure	Whorls	16	148.000	18.00741
	Loops	40	136.0500	11.73631

- It was seen that the most predominant pattern was loops (66.7%) followed by whorls (26.7%). (Figure 1).

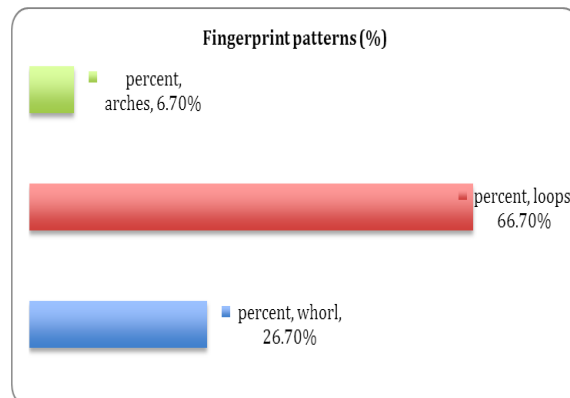


Figure 1: Percentage of various fingerprint patterns.

- Loops were more common in hypertensive females and whorls were more common in hypertensive males.

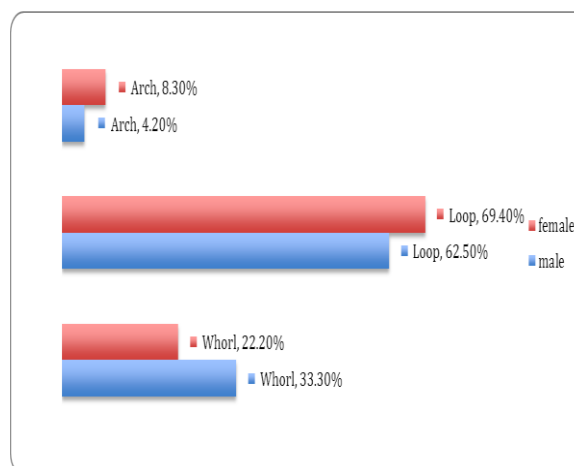


Figure: 2 Comparisons of various fingerprint patterns with sex.

- The mean BMI was high in patients with more whorls and loops when compared to patients with arches.
- Systolic blood pressure was high in patients with more whorls when compared to patients with more loops and arches.
- Diastolic blood pressure also was high in patients with whorls when compared to patients with loops and arches.

	Arches	4	133.500	5.50757
Diastolic blood Pressure	Whorls	16	90.3750	10.5633
	Loops	40	84.700	7.0988
	Arches	4	84.500	4.43471
Pulse rate	Whorls	16	74.6250	6.64204
	Loops	40	73.2000	5.12010
	Arches	4	72.0000	4.89898

- Systolic blood pressure was high in patients with no family history when compared to patients with a family history of hypertension.
- Result was similar with diastolic blood pressure being high in patients with no family history.

Table: 2 Comparison of family history with hypertension

	Family History	Number of patients	Mean	Standard Deviation	T
Systolic blood pressure	No	30	141.400	17.04477	1.26990
	Yes	30	136.7333	10.73163	p = 0.21 ns
Diastolic blood pressure	No	30	88.1333	8.67709	1.84900
	Yes	30	84.2667	7.47840	p = 0.07 ns

- Mean BMI was high in patients who had a family history of hypertension when compared to patients without a family history of hypertension.

Table: 3 Comparison of BMI and family history

	Family history	Number of patients	Mean	Std. Deviation	T
BMI	No	30	21.4867	1.86672	2.53800
	Yes	30	23.2133	3.22455	p=0.014 sig

DISCUSSION

Hypertension is a disorder of strong hereditary background, so dermatoglyphics can be used as a screening test to establish diseases with strong genetic basis. Dermatoglyphic traits to a larger extent are determined by heredity, which is evident from the closer resemblance among related persons. The present study comprised of comparing the various fingerprint patterns and noting the specific variation in cases of hypertension.

Shiono H (1986) observed that in normal population the frequency of loops, whorls and arches is 65-67%, 23-25% and 6-7%.^[5] The results obtained in the present study also correlate with the studies in the past. Loops were found predominant in the surveyed population.

Polyzova D et al (1993) pointed out an increase in frequency of whorls in hypertensive patients⁸. Godfrey KM et al (1993), observed a high blood pressure in patients with more whorls⁹. The present study showed an increase in the frequency of whorls (26.7%) compared to the normal population.

Females showed a higher frequency of loops and males showed a higher frequency of arches. Female hypertensives had an increased frequency of loops (66.7%), and males had an increased frequency of whorls (26.7%) when compared to normal population. Systolic blood pressure was high in patients with more whorls when compared to patients with more loops and arches.

Similar results were found with diastolic blood pressure also. The observed differences seem to indicate a genetic influence in the etiology of essential hypertension.

In the present study hypertension was found to be more common in females with no family history and in males with family history of hypertension. Systolic blood pressure and diastolic blood pressure were high in patients with no family history when compared to patients with family history of hypertension. As pointed by Stamler R et al (1978), obesity is a risk factor for hypertension.^[10] It was found that mean BMI was high in patients with more whorls and loops when compared to patients with arches.

CONCLUSION

Hypertension, being one of the curses of the human civilization is genetically linked and the ridge formation involves both genetic and environmental factors. Predominant pattern among young hypertensives was loops (66.7%) followed by whorls (26.7%). And frequency of whorls was increased among young hypertensives when compared to normal population. Further studies are required regarding this aspect for proper development of a screening test using fingerprints in both young and old hypertensives.

LIMITATIONS

Small sample size, Short duration of study, further details of finger print pattern of individuals.

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