

STUDY OF FINGERPRINT PATTERNS IN TYPE II DIABETES MELLITUS

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ABSTRACT

Objective: To correlate between fingertip patterns between type II diabetic cases and controls.

Methodology: One hundred type II diabetes mellitus patients (50 male and 50 female) were selected for study and compared with equal number of controls. Fingerprints were obtained by printing method. Parameters studied were arches, whorls, loops. Distribution of fingertip patterns showed significant difference between diabetics and controls.

Result and Conclusion: In diabetic patient's frequency of whorls was significantly increased in both hands of males and females. While frequency of loops was significantly decreased in both hands of male and female diabetics as compared to controls. Arches were significantly reduced in right and left hands of male and left hand of female diabetics.

KEY WORDS: Dermatoglyphics, Type II diabetes mellitus, Whorl, Loop, Arch.

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INTRODUCTION

Diabetes mellitus is a metabolic disorder characterized by hyperglycemia resulting from defects in insulin secretion, action or both. Based on etiopathogenic categories, it is classified as Type 1 and Type 2 diabetes mellitus. In Type 1 there is absolute deficiency of insulin secretion. In Type 2 there is a combination of resistance to insulin action and inadequate compensatory insulin secretory response [1]. Diabetes is a multisystem disorder that affects many organs of the body [2].

Diabetes is increasing in several parts of the world, especially in developing countries like

India. The total number of diabetics is projected to rise from 171 million in the year 2000 to 366 million in 2030 [3,4].

Dermatoglyphic patterns are genetically determined and can be used as supportive for the diagnosis of various hereditary disorders including type II diabetes. Though extensive research work has been carried out regarding dermatoglyphics and diabetes mellitus independently; combined study correlating the two entities are few. So, to bring forth correlation between dermatoglyphics and type - II diabetes mellitus and evaluate their significance, present study has been carried out.

MATERIALS AND METHODS

One hundred type II diabetes mellitus patients (50 male and 50 female) were selected for study and compared with equal number of controls from Medicine OPD & ward of KIMS, Narketpally from September 2011 to February 2012. Written informed consent was taken from the study subjects. Dermatoglyphic prints were taken by using Ink Method by "Cummins and Midlo" [5]. Fingerprints were obtained by using Kores duplicating ink and cotton ball on white paper. The fingers were printed by rolling them from radial to ulnar side to include the patterns. Fingerprint patterns of all the digits were recorded and studied with the help of magnifying lens. Parameters observed were loops, whorls, arches. The printed sheets were coded with name, age, sex, address.

Inclusion Criteria for cases includes: Blood sugar level- Fasting -120mg% and postprandial 180mg%, Absence of any other genetic disorder. Whereas Inclusion Criteria for controls includes: Peoples with an age above 30 years, has a normal blood sugar levels and there should be no family history of diabetes mellitus.

RESULTS

Table 1 shows the distribution of fingertip patterns on right and left hand in male diabetics and controls. From the table it is evident that whorls were significantly increased whereas loops and arches were significantly decreased in male diabetics as compared to controls. Also, table 2 shows that whorls were significantly increased while loops were significantly decreased in female diabetics as compared to female controls. However arches were significantly decreased in left hand of female diabetics.

DISCUSSION

Dermatoglyphics deals with the study of epidermal ridges on fingertips, palms and soles. Dermatoglyphic patterns shows relative similarity among close relatives especially monozygotic twins [6] suggesting that patterns are genetically determined. It can be useful in predicting the hereditary diseases in patients.

In a study by Sant et al. it was noted that the frequency of whorls was increased and frequency of loops was decreased in both hands

Table 1: Distribution of fingertip patterns in Male diabetics and controls.

Fingertip Pattern	Right Hand			Left Hand		
	Diabetics	Controls	'p' value	Diabetics	Controls	'p' value
Loop	40.20%	59.80%	Significant p < 0.001	41.40%	60%	Significant p < 0.001
Whorl	56.60%	32.20%	Significant p < 0.001	55.60%	32.50%	Significant p < 0.001
Arch	3.20%	8%	Significant p = 0.001	3%	7.50%	Significant p = 0.001

Table 2: Distribution of fingertip patterns in Female diabetics and controls.

Fingertip Pattern	Right Hand			Left Hand		
	Diabetics	Controls	'p' value	Diabetics	Controls	'p' value
Loop	45%	66.20%	Significant p < 0.001	42.40%	64.60%	Significant p < 0.001
Whorl	47.80%	26%	Significant p < 0.001	49%	23.10%	Significant p < 0.001
Arch	7.20%	8.80%	Not Significant	8.60%	12.30%	Significant p = 0.001

of male and female diabetic patients and both findings were significant [7] coinciding with the present study.

In a study by Sengupta S et al. it was found that there was an increased frequency of whorls in male diabetics [8] which matches with present study.

Srivastava S et al found that there was increase frequency of whorl pattern in both sexes [9] which correlates with present study.

In present study whorls were significantly increased and loops were significantly decreased in male and female diabetics as compared to controls. Arches were significantly decreased in both hands of male diabetics as compared to controls. Also arches were significantly decreased in left hand of female diabetics. Pathan F et al observed significantly increased in whorls and significantly decreased loops in diabetics. Arches were significantly decreased in right hand of male diabetics and left hand of female diabetics [10]. Thus, coinciding with present study.

CONCLUSION

The present study can be used as a screening tool for the diagnosis of individuals who are more prone to develop diabetes mellitus and thereby preventing the future diabetic complications.

Conflicts of Interests: None

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