

## \* PALMAR DERMATOGLYPHICS IN PSORIASIS - A PILOT STUDY

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### Abstract

Palmar dermatoglyphics was studied in 24 female cases of psoriasis and 25 normal females. Two parameters were studied. Mean values of ridge count from triradial point to point of core between psoriasis and normals showed statistically significant difference in right palm digit I and left palm digit IV. Study of metric analyses of palms between psoriasis and normals showed that mean values of vertical distance from a-d to the axial triradius on left side showed a statistically significant difference. The role of study of palmar dermatoglyphics is to predict the disease, and help in genetic counselling.

### Introduction

Dermatoglyphics (G. glyphe, carved work) is defined as "The surface markings (sharply sculptured ridges) of the skin, especially of the palmar and plantar regions."<sup>1</sup>

Dermatoglyphics is perhaps the most important and advantageous field for biological and medical investigations. It is concerned with the topography of the system of parallel ridges at the macroscopic level, better

and fairly seen by naked eye or with the help of a hand lens. Cummins<sup>2</sup> introduced the term in 1926.

Skin of the human body in areas like palms are corrugated with narrow ridges. These are age stable and there is no change in their arrangement and structure after birth. The ridge formation starts in early fetal life beginning at the third month, continuing during the fourth and completed by the fifth month.

Dermatoglyphics has a genetic component. It is assumed that genes take part in development of these ridges, and any gene predisposing to a familial disorder will alter the dermatoglyphic pattern. "Dermatoglyphic patterns are differentiated into definitive form by the third or fourth month of foetal life and are considered to be influenced by genetic as well as environmental factors very early in fetal development. Once established, patterns do not change throughout the life of an individual.<sup>3</sup> It can thus be a helpful tool in establishing a diagnosis in clinical medicine.

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**Material and Methods**

The present study was carried out in the Unit of Skin and V.D., M.Y. Hospital, Indore, M.P. The clinical material comprised 24 female cases of psoriasis. 25 normal females served as controls.

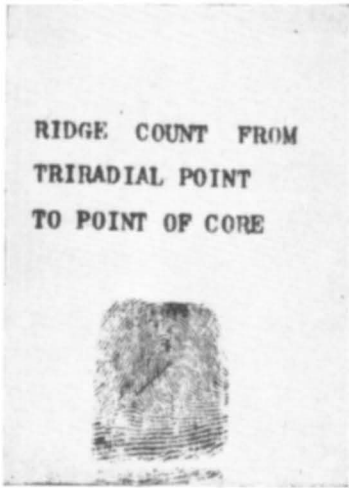
The study group consisted of patients in the age group of 6 to 60 yrs. The control group was age-matched. All cases of psoriasis included in the study showed characteristic clinical features with sharply defined erythematous scaly plaques and history of remissions and relapses. Any other associated condition was ruled out by thorough clinical examination.

Individuals whose prints were to be taken were made to wash their hands before taking the prints. Subsequently a small daub of ink was placed on a sheet of paper. By the help of a roller it was spread out in both vertical as well as horizontal directions. This was done for even spread. The roller was then rolled on the palm in such a manner that no extra ink would be found. After the ink had been uniformly spread, the person was asked to apply his hand on a sheet of white dry paper. A uniform pressure was applied by the observer. Prints of fingers were taken by rolling these from side to side so that impression of both sides could be taken. Hand was then removed.<sup>4</sup>

**TABLE 1**  
Showing statistical comparison of ridge count from triradial point to point of core in 24 female cases of psoriasis and 25 normal females

		Right palm		Left palm	
		Normal	Psoriasis	Normal	Psoriasis
Digit I	Mean	14.6	18.04	14.00	16.57
	Range	7-21	10-30	6-23	10-23
	S. D.	6-10	5.5	4.70	4.43
	t		2.13		1.97
	P		<0.05		>0.05
	Result		SIGNIFICANT		INSIGNIFICANT
Digit II	Mean	10.8	12.42	10.96	12.04
	Range	6-21	6-27	2-19	5-27
	S. D.	3.63	4.58	4.34	4.9
	t		1.7026		0.749
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT
Digit III	Mean	12.42	13.35	12.12	13.85
	Range	7-23	5-19	7-22	6-22
	S. D.	4.35	3.93	4.13	4.41
	t		0.7951		1.43
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT
Digit IV	Mean	11.08	15.71	12.46	15.65
	Range	5-24	9-24	3-26	5-28
	S. D.	5.0	4.6	5.02	5.2
	t		1.896		2.06
	P		>0.05		<0.05
	Result		INSIGNIFICANT		SIGNIFICANT
Digit V	Mean	11.83	12.35	11.11	12.95
	Range	6-22	6-17	6-22	8-23
	S. D.	4.42	4.0	4.49	4.37
	t		0.429		1.42
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT

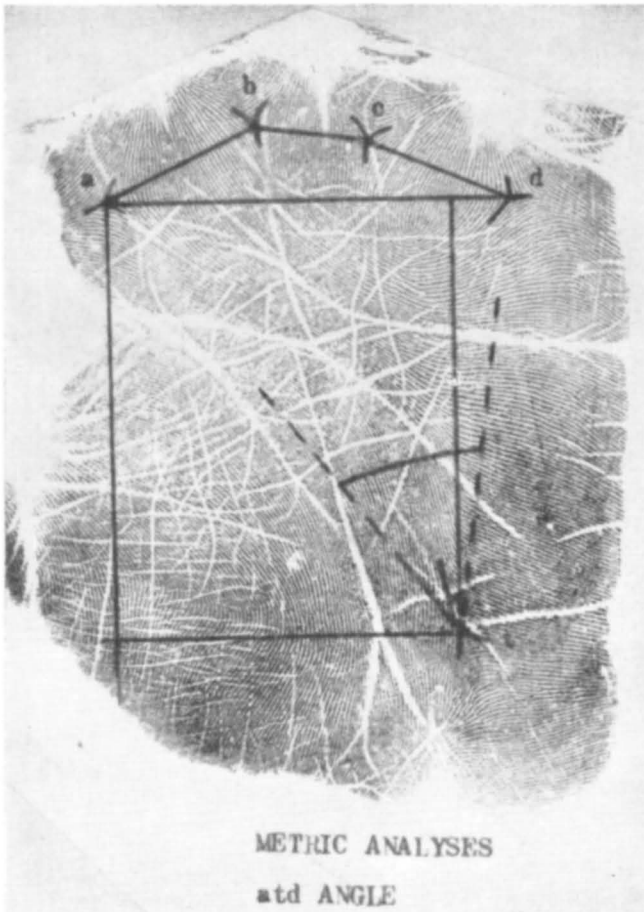
The parameters studied were (i) ridge count from triradial point to point of core, and (ii) metric analyses of palms (Fig 1 & 2).



### Observations

A comparative study was done in ridge count from triradial point to point of core. Mean values of ridge count from triradial point to point of core between psoriasis and normals showed significant difference ( $P < 0.05$ ) in right palm digit I and left palm digit IV; values on other digits were insignificant ( $P > 0.05$ ) (Table 1).

Study of metric analyses of palms between psoriasis and normals showed



that mean values of vertical distance from a-d to the axial triradius on left side showed a significant difference ( $P < 0.05$ ), values of other intervals being insignificant ( $P > 0.05$ ) (Table 2).

**Discussion**

Genetic influences are reflected in ridge patterns. A study of palm and digits was done because it is presumed that this gives the most sensitive index

**TABLE 2**  
Showing statistical comparison of values of metric analyses in 24 female cases of psoriasis and 25 normal females

		Right palm		Left palm	
		Normal	Psoriasis	Normal	Psoriasis
Intertriradial interval a-b	Mean	2.16 cm	2.1 cm	2.24 cm	2.14 cm
	Range	1.6-2.4	1.5-2.6	1.8-2.5	1.7-2.0
	S. D.	0.23	0.124	0.23	0.26
	t		1.045		1.26
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT
Intertriradial interval b-c	Mean	1.67 cm	1.50 cm	1.68 cm	1.46 cm
	Range	1.1-3.2	1.0-2.1	1.0-2.8	0.8-2.0
	S.D.	0.46	0.38	0.41	0.38
	t		1.44		1.80
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT
Intertriradial interval c-d	Mean	1.96 cm	1.93 cm	1.76 cm	1.91 cm
	Range	0.7-2.9	0.9-2.1	0.6-2.7	1.3-2.0
	S. D.	0.50	0.45	0.55	0.52
	t		0.225		0.9
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT
Intertriradial interval a-d	Mean	5.08 cm	5.05 cm	5.16 cm	4.92 cm
	Range	4.0-6.3	4.1-5.8	4.0-6.2	4-5.0
	S. D.	0.76	0.64	0.58	0.67
	t		0.158		1.21
	P		>0.05		>0.05
	Result		INSIGNIFICANT		INSIGNIFICANT
Vertical distance from a-d to the axial triradius	Mean	6.52 cm	6.34 cm	6.09 cm	6.91 cm
	Range	4.9-7.6	3.9-8.0	3.9-8.0	4.9-7
	S. D.	0.23	1.24	1.07	0.95
	t		0.4862		2.92
	P		>0.05		<0.05
	Result		INSIGNIFICANT		SIGNIFICANT
Axial triradius to a vertical dropped proximally from triradius a, the interval being measured along a line parallel to a-d	Mean	3.82 cm	3.80 cm	3.95 cm	3.82 cm
	Range	2.8-4.8	2.7-4.6	2-5.0	2.9-4.5
	S.D.	0.65	0.6	0.65	0.57
	t		0.1116		0.77
	P		>0.05		>5.05
	Result		INSIGNIFICANT		INSIGNIFICANT

of dermatoglyphics. Among those existing in dermatoglyphics the two parameters studied were found to be most important and informative.

Psoriasis is a common skin disorder. Dermatoglyphics suggests patterns of the disease. Newborn infants could be studied from the dermatoglyphic point of view. Thus the disease to which the new born infant is predisposed can be predicted.

Dermatoglyphic study in psoriasis will also help in genetic counselling in relation to the disease.

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