

## Qualitative Dermatoglyphic Analysis of Finger Tip Patterns In Patients Of Oral Sub Mucous Fibrosis

Tamgire Dw<sup>1</sup>, Fulzele Rr<sup>2</sup>, Chimurkar Vk<sup>3</sup>, Rawlani Ss<sup>4</sup>, Sherke Ar<sup>5</sup>

<sup>1</sup>(Department Of Anatomy, KIMS, Narketpally, AP, India)

<sup>2</sup>(Department Of Anatomy, JNMC, Sawangi, Wardha, India)

<sup>3</sup>(Department Of Anatomy, JNMC, Sawangi, Wardha, India)

<sup>4</sup>(Department Of Anatomy, PDMMC, Amaravati, India)

<sup>5</sup>(Department Of Anatomy, KIMS, Narketpally, AP, India)

**Abstract:** Dermatoglyphics is the collective name for all those integumentary features within the limits to be defined and it applies to the division of anatomy which includes their study. Diagnosis of many diseases which are genetically or non genetically determined like Diabetes mellitus, Schizophrenia, Hypertension, etc can now be aided by dermatoglyphic analysis. Oral submucous fibrosis is a chronic precancerous oral disease, specially seen in gutkha chewers, but not all the gutkha chewers develops the disease or non gutkha chewers may also develop the disease. Genetic predisposition explains such individual variability. Such genetic predisposition can be explored with the help of dermatoglyphic studies. 100 gutkha chewers with Oral Submucous fibrosis and 100 Gutkha chewers without Oral submucous fibrosis were selected for the study and their qualitative dermatoglyphic analysis with specific reference to finger tip patterns was carried out and was statistically analyzed. Some highly significant patterns were observed in patients with Oral submucous fibrosis.

**Key Words-** Dermatoglyphics, Oral submucous fibrosis, Gutkha Chewers, Finger Tip Patterns

### I. Introduction

Dermatoglyphics (Derma = Skin + Glyphe = Carve) is a collective name for all those integumentary features within the limits to be defined, and it applies also to the division of Anatomy which includes their study.<sup>1</sup>

Study of the patterns of the epidermal ridges of fingers, palm and sole can serve as an aid to the diagnosis of many diseases, particularly those caused by chromosomal aberration, which are frequently accompanied by distortion of patterns, and non-genetically determined diseases as well.<sup>2</sup>

Diagnosis of Diabetes Mellitus<sup>3</sup>, Schizophrenia<sup>4</sup>, hypertension<sup>5</sup>, etc. can now be aided by dermatoglyphic analysis.

Since most of the investigations needed to confirm the diagnosis in hereditary disorders are complex and expensive, dermatoglyphics can be efficiently employed with other clinical signs as a screening procedure to define indications for these laboratory procedures.

Oral submucous fibrosis is a chronic precancerous disease of oral mucosa characterized by inflammation and progressive accumulation of collagen fibers in lamina propria and deeper connective tissue followed by stiffening of an otherwise yielding mucosa resulting difficulty in opening the mouth.<sup>7,8</sup>

The available epidemiological evidences suggest that chewing of Gutkha (Areca Nut) is an important risk factor for Oral Submucous Fibrosis, but not all the chewers develop the Oral Submucous Fibrosis. Genetic predisposition explains such individual variability.<sup>9</sup>

If dermatoglyphic marker of Oral Submucous Fibrosis is found, it will be of immense clinical importance in this era of Gutkha chewing, so that the people developing OSMF may be forecasted amongst the Gutkha chewers.

### II. Material And Method

A prospective study was carried out at Department of Anatomy, Jawaharlal Nehru Medical College, Sawangi (M), Wardha and designed to collect the dermatoglyphic prints of the gutkha chewers with and without Oral Submucous Fibrosis. Study consisted of 200 subjects divided into two groups.

Group A- 100 gutkha chewers without Oral submucous fibrosis were the subjects accompanying the patients, staff and students of various institutes in the campus.

Group-B Gutkha chewers with oral submucous fibrosis were diagnosed patients of Oral submucous fibrosis with history of gutkha chewing habit attending the out patient department of Oral Medicine and Diagnosis, Sharad Pawar Dental College, Sawangi (M), Wardha.

Method

Dermatoglyphic prints were obtained using ink method described by Cummins and Midlo (1961)<sup>1</sup> and as per guidelines by American Association of Dermatoglyphics (Reed T. Meier R. 1990).<sup>10</sup>

Statistical Analysis

The data was analyzed statistically by using Chi-Square Test and Fisher’s Exact Test.

**III. Observations And Result**

Observations on finger prints are made under following heads.

Qualitative analysis of finger prints

- a. Arches: - Fig. No 1
- b. Loops- (Radial loop & Ulnar loop) Fig. No. 2
- c. Whorls- (Simple and Composite) Fig. No. 3

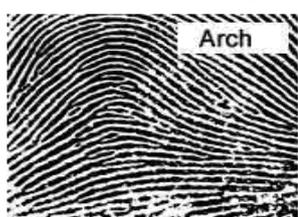


Fig. No 1



Fig. No. 2



Fig. No. 3

Fingertip patterns in both, right and left hand taken together in both the groups are compared as shown in TABLE NO. I.

**Table No. I-**  
FINGERTIP PATTERNS IN BOTH, RIGHT AND LEFT HAND TAKEN TOGETHER IN BOTH THE GROUPS

PATTERN	GROUP-A n=100		GROUP-B n=100		X <sup>2</sup>	p
	TOTAL	%	TOTAL	%		
ARCH	44	4.4%	60	6%	1.62	0.2
LOOP U	592	59.2%	590	59%	0.00048	0.98
LOOP R	18	1.8%	16	1.6%	0.1	0.75
WHORL S	280	28%	263	26.3%	0.14	0.7
WHORLC	60	6%	71	7.1%	0.55	0.45

X<sup>2</sup>=Chi Square Test Value \* p<0.05 Significant

It is seen that all the patterns are equally distributed in both groups.

**Table No. II**  
INDIVIDUAL DIGIT WISE SPLIT UP OF FINGER TIP PATTERNS IN BOTH HANDS.

Finger	Right /Left	Groups	Arch	Loop (Ulnar)	Loop (Radial)	Whorl (Simple)	Whorl (Composite)
D1	Right	A	0	64	0	18	18
		B	2	47	2	37	12
	Left	A	4	67	2	18	10
		B	2	56	0	15	27
D2	Right	A	12	35	6	34	14
		B	12	44	8	34	2
	Left	A	16	40	10	30	2
		B	20	44	2	30	4
D3	Right	A	4	77	0	16	4
		B	6	76	20	16	0
	Left	A	8	65	2	22	6
		B	12	68	2	16	2
D4	Right	A	0	49	0	46	2
		B	2	45	0	51	2
	Left	A	0	48	0	48	4
		B	0	48	0	48	4

		B	0	54	0	44	2
D5	Right	A	0	70	0	30	0
		B	2	77	0	20	1
	Left	A	0	82	0	18	0
		B	2	79	0	0	19

D1- Thumb, D2- Index finger, D3- Middle finger, D4- Ring finger, D5- Little finger

**Table – III** COMPARISON OF EACH FINGER TIP PATTERNS OF RIGHT HAND AND LEFT HAND IN BOTH A&B GROUPS (Using Fisher’s Exact Test),

Finger	Right /Left	Arch	Loop (U)	Loop (R)	Whorl (S)	Whorl (C)
D1	Right	0.49	0.23	0.49	<b>0.03*</b>	0.33
	Left	0.68	0.49	0.49	0.70	<b>0.01*</b>
D2	Right	1.00	0.35	0.78	1.00	<b>0.003*</b>
	Left	0.58	0.79	<b>0.03*</b>	1.00	0.68
D3	Right	0.74	1.00	0.49	1.00	0.12
	Left	0.48	0.82	0.49	0.38	0.28
D4	Right	0.49	0.89	NA	0.7	1.00
	Left	NA	0.71	NA	0.80	0.68
D5	Right	0.49	0.66	NA	0.26	1.00
	Left	0.49	0.911	NA	<b>0.0001*</b>	<b>0.0001*</b>

\* = Significant, p value < 0.05

D1- Thumb, D2- Index finger, D3- Middle finger, D4- Ring finger, D5- Little Finger

Following significant differences were noted in descending order of significance.

- 1) Highly significant decrease in simple whorl pattern on left little finger in Group B as compared with Group A.
- 2) Increase in composite whorl pattern on left little finger in Group B subjects when compared with group A.
- 3) Decrease in composite whorl pattern of right index finger in Group B when compared with Group A.
- 4) Increase in simple whorl pattern on right thumb in Group B when compared with Group A.
- 5) Increase in composite whorl pattern on left thumb in Group B as compared with Group A.
- 6) Decrease in radial loop on left index finger in Group B when compared with Group A.

Rest all the comparisons are not significant as shown in the TABLE NO. III

#### IV. Discussion

Dermatoglyphics is diagnostic aid which is very well reflected in number of diseases, genetically as well as non-genetically determined<sup>11</sup>.

Pal et al (1982)<sup>12</sup> Observed genetic component for various finger tip patterns.

Genetic etiology of oral submucous fibrosis has been studied since 1986<sup>13</sup>

Disease was also reported in some cases that do not practice Betel Nut chewing<sup>14</sup>

Familial occurrence of disease was also reported in northern Kerala, India.<sup>15</sup>

As there is paucity of literature on this subject there is still a lot of scope for studies to be conducted in order to universalize the finding of dermatoglyphics in this condition.

Only one study<sup>16</sup> is available on this topic and individual finger tip pattern is not compared.

There is no significant difference in finger tip pattern when they were compared taken together but significant differences were observed when individual finger of right and left hand of group-A were compared with group-B as stated in observations.

None of the earlier researchers have done such analysis in the disease hence there are no findings for comparison.

By seeing these dermatoglyphic parameters subjects chewing betel nuts may be forecasted and may be motivated strongly to quit the habit.

#### V. Conclusion

Such type of studies are needed to be undertaken under large scale to universalize the dermatoglyphic markers of oral submucous fibrosis which in turn will be acting as a powerful screening tool for the gutkha chewing population

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