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Dermatoglyphic findings in patients with oral Submucous fibrosis in Jammu population

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Abstract
Context: The hand has drawn great attention in the diagnosis of various pathologies in the field of medical research. The specific pattern seen on the fingertip and palmar regions on the hand (dermatoglyphics) of a person are unique and forms a distinctive imprint of an individual. The influence of genetic or environmental factors on early development is often reflected by the altered dermatoglyphics.
Aim and Objective: To determine the dermatoglyphic findings in patients with oral sub mucous fibrosis.
Materials and methodology: A prospective study was conducted on 26 subjects divided into two groups: group A consisted of 13 clinically and histologically proven OSMF cases and group B consisted of 13 controls. Fingerprints were taken using the ink method described by Cummins and Midlo. Statistical analysis was done using Chi-square and Fisher's exact tests.
Results: There was a marked decrease of ulnar loops, and an increase of simple whorls in patients with OSMF in comparison with control individuals.
Conclusion: We, therefore, recommend dermatoglyphics to identify individuals who are more prone to develop OSMF. We suggest the use of the same as an education tool for genetic counseling.

Keywords: OSMF, dermatoglyphics, arches, ulnar, whorls, Jammu

1. Introduction
Through decades of scientific research, the hand has caught great attention as a powerful tool in the diagnosis of medical, psychological and genetic conditions. Dermatoglyphics is a natural "carving" in the skin that is a furrow or fold [1] in 1926, Dr. Harold Cummins coined the word "dermatoglyphics". A complete system with rules for classification of fingerprints was formulated by Sir Francis Galton way back in 1892 [2]. Most importantly, they remain constant from before birth until death unaffected by any constitutional or environmental disturbances during the remaining gustative period [2]. In certain diseases, dermatoglyphic examination is carried out as an integral part of the investigative procedure. Literature shows many dermatoglyphic studies conducted in genetically inherited diseases such as Down's syndrome, leukemia, schizophrenia, diabetes, hypertension, epilepsy and cleft lip and cleft palate [3, 4].
Dermatoglyphic peculiarities were noted for the first time in Down's syndrome, which were published in the *Lancet*. Since then, a number of diseases have been correlated with dermatoglyphic peculiarities, such as schizophrenia [3], pulmonary tuberculosis [4], diabetes mellitus [5, 6], and hypertension [7]. In dentistry, the data on correlation with dermatoglyphics is less. Oral diseases such as oral cancer, bruxism, dental caries [8], dental fluorosis, etc., show a characteristic dermatoglyphic pattern with a sure scientific c basis which is explained by the unison of embryological origin of oral and dermatoglyphic patterns during fetal development.
Oral submucous fibrosis (OSMF) is a chronic precancerous disease of the oral mucosa characterized by inflammation and progressive accumulation of collagen fibers in the lamina propria and deeper connective tissue followed by stiffening of an otherwise yielding mucosa, resulting in difficulty in opening the mouth [9]. The classification of finger patterns according to Cummins is as follows: arch, tented arch, radial loop, ulnar loop, compound whorl, simple whorl, and double loop.

2. Aim and Objective
Aim and objective of our study was:
a) To determine the dermatoglyphic findings in patients with oral sub mucous fibrosis.
b) To compare the variations of fingerprints in the study and control group.

3. Materials and Methodology
The study group consisted of 13 clinically and histologically proven cases of OSMF. Detailed clinical examination followed by incision biopsy was conducted in the subjects of the study group with the consent of patients. The fingerprints were taken using Camel ink on an A4 size paper by the Rolling Finger Technique (RFT) described by Cummins and Midlo [11]. Dermatoglyphic analysis was conducted by obtaining fingerprints of both hands of the subjects from the control group, who were age and sex-matched with the subjects in the study group. Camel Quick ink, rubber roller, A4 size white paper, a pressure pad made of rubber foam, cotton puffs, a scale, a pencil, and a pen were used to take impression of the finger. After inking, the finger was pressed

edge down against the paper margin and it was rolled to the opposite edge. The thumb was placed with the ulnar edge down and it was rolled toward the body.

The other digits were placed with their radial edges down and they were rolled away from the body. While taking imprints of the palm, special attention was given to mark the zone of flexion creases at the wrist and at the ulnar margin, the flexion creases where the fingers join the palm, and at the central hollow of the palm [11]. The different quantitative parameters of each hand of the study and control groups were studied. The parameters included were the fingertip ridge patterns and counts. Statistical analysis was done using Chi-square and Fisher's exact tests.

4. Results

The demographic data of the fingerprint patterns in the study group and control group are presented in Table 1. Descriptive statistics and correlation test were performed to determine the *P*-value for each variable, which is shown in table 2. There was a significant decrease in the frequency of ulnar loop, and there was an increase in the frequency of appearance of the simple whorl pattern in the OSMF patients. Fisher is exact and Chi-square tests were statistically significant in two types of fingerprint patterns in our study. According to Chi-square test, the results relating to ulnar loop and simple whorl were highly significant with $P > 0.0005$.

Table 1: Demographic data of the fingerprint patterns in the study group and control group

Total pattern	Group A (*n* = 13) OSMF:(130 pattern)	Group B (*n* = 13) CONTROLS: (130 pattern)	Percentage		p-value
			(OSMF) A	(Normal) B	
Tented arch	00	00	00%	00%	1 Not significant
Arch	01	01	0.76%	0.76%	1 Not significant
Ulnar loop	75	101	57.69%	77.69%	0.0005 Highly significant
Radial loop	10	08	7.69%	6.15%	0.625 Not significant
Double loop	00	00	00%	00%	1 Not significant
Compound whorl	00	00	00%	00%	1 Not significant
Simple whorl	44	20	33.84%	15.38%	0.0005 Highly significant
Total	OSMF- 130	Controls- 130	100%	100%	

5. Discussion

A widespread precancerous condition that is especially prevalent in Southeast Asia is oral sub mucous fibrosis. An important predisposing factor is chewing areca nut; but not all patients with chronic habits are affected and in some patients, the history does not reveal its prolonged use. Genetic susceptibility is also responsible for such variations. Oral sub mucous fibrosis has also been reported in those people who have no habit of areca nut chewing [12].

The formation of fingerprints and palm prints occurs during the first 6-7 weeks of the embryonic period and their formation is completed after 10-20 weeks of gestation [13]. The abnormalities in these are influenced by a combination of hereditary and environmental factors, which appear only when the combined factors exceed a certain level [14]. Some studies showed that there is increased frequency in ulnar loops on the fingertips is virtually in Down's syndrome patients. In some cases of cleft lip with or without cleft palate, there was an increased frequency of ulnar and radial loops than arches and whorls [15]. In oral neoplasia's, dermatoglyphic patterns showed an increased frequency of arch pattern on the fingertips [16]. In Bruxism, increased frequency of whorls and a decreased frequency of ulnar loops were seen, when compared with controls. One study showed 33.84 % whorls in OSMF patients while, as same pattern was just 15.38 % in controls. Our study also showed 57.69 % ulnar loop type of fingerprints in oral sub mucous fibrosis patients when compared to that of controls which was 77.69%. Both these results were statistically highly significant. In another study on oral squamous cell carcinoma patients, 70% loops, 32.30% whorls, and 7.0% arch pattern of fingerprints were found [17].

In another study, dermatoglyphic pattern and caries experience of deaf, mute children showed increased frequency of whorl pattern in the caries group, and the frequency of loops was more in the caries-free group [8]. Studies correlating the association of dermatoglyphic with OSMF and other oral mucosal lesions are very few.

6. Conclusion

The fingerprints could then be used to screen for detecting the potential to develop OSMF. With our study, we concluded that there was a marked decrease of ulnar loops, and an increase of simple whorls in patients with OSMF in comparison with control individuals. We, therefore, recommend dermatoglyphics to identify individuals who are more prone to develop OSMF. We suggest the use of the same as an education tool for genetic counseling.

7. References

1. Tamgire DW, Fulzele RR, Chimurkar VK, Rawlani SS, Sherke AR. Qualitative dermatoglyphic analysis of fingertip patterns in patients of oral submucous fi brosis. IOSR J Dent Med Sci 2013; 6:24-7.
2. Ramani P, Abhilash PR, Sherlin HJ, Anuja N, Premkumar P, Chandrasekar T, *et al*. Conventional dermatoglyphics - Revived concept: A review. International Journal of Pharma and Bio Sciences 2011; 2:B446-58.
3. Golembo-Smith S, Walder DJ, Daly MP, Mi al VA, Kline E, Reeves G, *et al*. The presentation of dermatoglyphic abnormalities in schizophrenia: A meta-analytic review. Schizophr Res 2012; 142:1-11.
4. Babu SS, Powar BP, Khare ON. Palmar dermatoglyphics in pulmonary tuberculosis. J Anat Soc India 2005; 54:64.
5. Chowdhary ES, Busar RP. Dermatoglyphics study of juvenile diabetes mellitus abstract. J Anat Soc India 1982; 31:43.
6. Shield JP, Wadsworth EJ, Hobbs K, Baum JD. Dermatoglyphics, fetal growth, and insulin dependent

diabetes in children under 5 years. Arch Dis Child 1995; 72:159-60.
7. Kulkarni DU, Herekar NG. Dermatoglyphics in essential hypertension in Western Maharashtra population abstract. J Anat Soc India 2004-2005; 54:262.
8. Bhat PK, Badiyani BK, Aruna CN, Chengappa S, Bhaskar NN. Dermatoglyphics- A new diagnostic tool in detection of dental caries among deaf and mute children. Int J Clin Dent Sci 2011; 2:80-4.
9. Pindborg JJ, Barmes D, Roed-Petersen B. Epidemiology and histology of oral leukoplakia and leukoedema among Papuans and New Guineans. Cancer 1968; 22:379-84.
10. Control of oral cancer in developing countries. A WHO Meeting. Bull World Health Organ 1984; 62:817-30.
11. Raizada A, Johri V, Ramnath T, Chowdhary D, Garg R. A crosssectional study on the palmer dermatoglyphics in relation to carcinoma breast patients. J Clin Diagn Res 2013; 7:609-12.
12. Seedat HA, Van Wyk CW. Submucous fi brosis in non-betel nut chewing subjects. J Biol Buccale 1988; 16:3-6.
13. Mathew L, Hegde AM, Rai K. Dermatoglyphic peculiarities in children with oral clefts. J Indian Soc Pedod Prev Dent 2005; 23:179-82.
14. Carter CO. Genetics of common disorders. Br Med Bull 1969; 25:52-7.
15. Balgir RS. Dermatoglyphics in cleft lip and cleft palate anomalies. Indian Pediatr 1993; 30:341-6.
16. Polat Hakan M, Gülülmser E, Banu K. Dermatoglyphic findings in patients with oral cancers. Balkan J Stomatol 2004; 8:105-8.
17. Venkatesh E, Bagewadi A, Keluskar V, Shetty A. Palmar dermatoglyphics in oral leukoplakia and oral squamous cell carcinoma patients. J Indian Acad Oral Med Radiol 2008; 20:94-9.