

Comparison of Finger Print Patterns in Patients with and without Oral Submucosis Fibrosis - A Dermatoglyphics Study

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ABSTRACT

Introduction: The introduction of chewing tobacco containing areca nut into the market has led to a sharp increase in the frequency of OSMF. Henceforth, present study was undertaken to find out any correlation of dermatoglyphic parameters with Oral Submucosis fibrosis which could act as a useful tool in assessing the risk of OSMF in gutka chewers.

Material and methods: The present cross-sectional study comprised of 30 subjects, 15 patients with and 15 patients without oral submucous fibrosis with history of gutka chewing since past 10 years. Fingerprints were taken using Camel ink on an A4 white paper by using ink and paper method which were studied for the pattern. atd angles were measured in both hands and mean±standard deviation calculated. Chi square test was applied with p-value<0.05 considered as significant value.

Results: The present study found decrease in arches pattern, radial loop pattern, whorl pattern and atd angle in patients with OSMF.

Conclusion: Palmar Dermatoglyphics can foretell the probability of occurrence of OSMF which can help in screening of gutka chewers to identify susceptible persons and can recognize a person in the prefibrosis stage.

Keywords: Dermatoglyphics; Fingerprints; OSMF

INTRODUCTION

From the time of early civilization, the features of the hands have been an area of interest to predict the future. Over the years of scientific research, the hand has come to be acknowledged as a useful tool in the diagnosis of psychological, genetic and other medical conditions. The term dermatoglyphics refers to the study of the naturally occurring patterns of the surface of the hands and feet. It was first introduced by Cummins in 1926 and since then, this approach has been a topic of interest of various scientific researchers to determine a relationship between fingerprints and various medical conditions.¹

In humans, the mammary buds begin to develop during the 6th week, as solid down growths of the epidermis, into the underlying mesenchyme. The dermal ridges develop in relation to the volar pads are formed by the 6th week of gestation and they reach their maximum sizes between the 12th and 13th weeks. This means that the genetic message is deciphered during this period and it is also reflected by dermatoglyphics.² Various studies show agreement of dermatoglyphic features in assessing various medical conditions.²⁻⁵

Oral submucous fibrosis (OSMF) is a disease that is prevalent mainly in South Asian populations due to chewing of areca nut which is an ingredient of betel quid. Disease contributes in significant morbidity as it leads to loss of mouth function as oral tissues become rigid and mouth opening

reduces and mortality due to malignant transformation into squamous cell carcinoma occurs.⁶

Henceforth, present study was undertaken to find out correlation dermatoglyphic parameters in OSMF patients in the and to determine whether any correlation exists between OSMF and palmar dermatoglyphics which could act as a useful tool in assessing the risk of OSMF in gutka chewers.

MATERIAL AND METHODS

The present cross-sectional study comprised of 30 subjects of age 30 to 50years, 15 patients with and 15 patients without oral submucous fibrosis with history of gutka chewing since past 10 years. Patients were selected from the out patient departments of vanachal dental college and Hospital Garhwa. The finger prints of individuals of similar age group and gender with history of Gutkha chewing with and without oral submucous fibrosis were taken for the study. Ethical clearance was obtained from institutional ethical committee. Informed consent was taken from the individuals after explaining them about the study. Patients of OSMF diagnosed and confirmed after histopathological examination were enrolled for the study. Patients were asked to fill proforma that included data regarding age, sex, address, history of gutkha chewing and other relevant medical history. Patients were asked to wash their hands with soap water and then the fingerprints were taken using Camel ink on an A4 white paper by using ink and paper method which were studied for the pattern. The finger tip pattern configurations were categorized as arches, loops and whorls. In order to find out the frequency of finger tip print patterns both hands i.e. all ten fingers of an individual were considered together.

STATISTICAL ANALYSIS

Statistical analysis was done with the help of SPSS version 21. atd angles were measured in both hands and mean±standard deviation calculated. Chi square test was applied with p-value<0.05 considered as significant value.

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Group	No. of patients	Arch	Loop		Whorls
			Radial	Ulnar	
Patients with OSMF	15	2.4%	1.6%	67%	29%
Patients without OSMF	15	4.2 %	3.2%	59.6%	33%
p-value	-	0.152	1.321	0.002	0.051

Table-1: Percentage frequency in patients with history of gutka chewing with and without OSMF

Group	No. of patients	atd angle (mean±standard deviation)	
		Right	Left
Patients with OSMF	15	41 ⁰ ±7.9	40 ⁰ ±9.4
Patients without OSMF	15	45 ⁰ ±2.2	45 ⁰ ±4.2

Table-2: Mean±standard deviation of atd angle in patients with history of gutka chewing with and without OSMF

RESULTS

In the present study all patients were male with mean age of 43.6±2.4 years and with a history of 14.3 with a history of 14.3±1.2 years. The table 1 shows percentage frequency of finger print pattern in patients with OSMF group and in patients without OSMF. Analysis of finger prints showed 2.4% arch pattern, 1.6% radial loops, 67% ulnar loops pattern and 29% whorls pattern in patients with OSMF and 4.2% arch pattern, 3.2% radial loops, 59.6% ulnar loops pattern and 33% whorls pattern in patients without OSMF. Significant p-value was found in ulnar pattern with p<0.05.

Table 2 shows mean atd angle in right and left hand and there was significant decrease in mean atd angle of both hands in patients with OSMF in comparison to patients without OSMF.

DISCUSSION

Dermatoglyphics is a scientific study of epidermal ridges and their configuration on the volar aspect of hands, fingers, feet and toes.⁵ The study of dermatoglyphics was pioneered in 1892 by Galton and it is a simple yet complicated tool in the study of genetic disorders. The palmar pattern is evaluated to get a better insight into the study of the disease under consideration.⁴

Millions of the people around world chew gutkha but not all of them develop oral submucous fibrosis. Genetic predisposition explains such individual variability.⁷ Thus, the present study was conducted to evaluate any association between oral submucous fibrosis palmar dermatoglyphics and found decrease in arches pattern, radial loop pattern, whorl pattern and atd angle in patients with OSMF. atd angle is the angle found by the axial triradius which is situated near the base of 5th metacarpal and the digital triradi.⁴

Tamgire DW et al⁷ conducted a study to find the dermatoglyphic markers for the patients of Oral submucous Fibrosis by assessing the quantitative dermatoglyphic parameters and reported that there was a significant decrease atd angle for the patients of Oral sub Mucous Fibrosis. Gupta A et al¹ studied role of dermatoglyphics as an indicator of precancerous and cancerous lesions of the oral cavity and reported that right hand showed decrease in atd angle and decrease in frequency of palmar accessory triradii in OSMF patients. Vijayaraghavan A et al⁸ analyzed the palmar dermatoglyph-

ics in patients suffering from OSMF and oral squamous cell carcinoma and found highly significant difference among the finger ridge, hypothenar pattern and mean ATD angle in OSMF and OSCC patients. Madura MG reviewed literature and concluded that analysis of dermatoglyphic pattern can prove to be a significantly useful tool for preliminary investigations in those conditions with a suspected genetic base.

CONCLUSION

Palmar Dermatoglyphics can foretell the probability of occurrence of OSMF which can help in screening of gutka chewers to identify vulnerable persons and can recognize a person in the prefibrosis stage. This can lead to prevention of OSMF in the population.

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