ORIGINAL RESEARCH PAPER

Radiology

KEY WORDS:

ROLE OF DERMATOGLYPHICS IN MILD TO MODERATE COVID19 POSITIVE PATIENTS.

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ABSTRACT

Aim: To determine the qualitative dermatoglyphic feature as a early predictor in mild to moderate Covid19 positive patients. **Objectives:** To analyze the fingerprint patterns i.e. arches, loops, whorls in mild to moderate covid19 positive patients. **Introduction:** Dermatoglyphics is a greek word meaning derma = skin and glyph = craving. It is the study of pattern of skin ridges on the fingers, toes, palms and soles. The function of the ridges is to give a firm grip. Dermatoglyphics was introduced in 1892 by Sir Francis Galton, one of the cousin of Charles Darwin by publishing his work on fingerprints. Dermatoglyphics was termed by Dr. Harold Cummins. It is one of the marker of genetic disease as it is reflected as arrangements of dermal ridges which is unique to every individual. Hence it is a safe and effective approach for correlation between dermatoglyphics and covid19. **Methodology:** Patients are asked to wash both their hands with soap and water so as to remove any oil and dirt. The hand is placed on well illuminated surface and camera is adjusted and pictures are obtained. The photographs thus obtained will be analyzed by using Image J software. **Statistics:** The collected data is entered in MS EXCEL and analysis is done using software –SPSS v.20. Descriptive data is expressed as frequency and percentages. **Results:** On examining 50 subjects bilateral fingerprint pattern, we found that most of the mild to moderate covid19 positive patients had loops followed by whorls.

INTRODUCTION:

We are aware that one of the marker of genetics disease is dermatoglyphics. Genetic make up of a person is reflected as arrangement of dermal ridges which is unique to every individual.

Hence it is a safe and effective approach to study dermatoglyphics in covid19 positive patients, so as to find if there is any correlation between the genetic make of an individual to succumb to disease.[1]

Dermatoglyphics is a greek word meaning derma = skin and glyph = craving. It is the study of pattern of skin ridges on the fingers, toes, palms and soles. The function of the ridges is to give a firm grip. Dermatoglyphics was introduced in 1892 by Sir Francis Galton, one of the cousin of Charles Darwin by publishing his work on fingerprints. Dermatoglyphics was termed by Dr. Harold Cummins.[2]

There are two advantages of dermatoglyphics in diagnosing the disease. First on is that epidermal ridge patters are completely developed at birth and they cannot be changed anytime in life. Second one being that it is inexpensive, easy to scan and study the ridges. It is visible through naked eye and maybe a magnifying glass would synergise the effect. To enhance the view of ridges, hands should be free from sweat, dirt which is accomplished by washing the hands with soap and water.[3]

Epideraml ridges are formed between tenth and eighteenth week of gestation, it is unique even in monozygotic twins.[4]

There are three basic patterns found in digits – the arch, the loop and the whorl. It depend on triradii which is a point formed by the meeting of three different ridges.[5]

For example, there is high risk of developing Schizophreniain left handers and they have more radial loop, modified radial loop and tented arch.[6]

A novel coronavirus is a severe acute respiratory syndrome, reported first in Wuhan, Hubei Province, China, in December 2019. It rapidly spread across China and around the world. The World Health Organization (WHO) declared the outbreak as Public Health Emergency of International Concern on January 30, 2020.It was named as COVID-19 (coronavirus disease of 2019) on February 12, 2020.[7]

There has been no specific treatment or vaccine for corona viral disease and hence number of measures has to be taken which includes social distancing, identifying the sick, following of contacts, preparing hospitals and training health care workers.[8]

Majority of patients with COVID-19 show mild to moderate symptoms, approximately 15% progress to severe pneumonia and 5% suffer from acute respiratory distress syndrome (ARDS) leading to septic shock and finally multi organ failure.[9] It is a challenging time for both public health and doctors.[10]

OBJECTIVES:

1. To analyze the fingerprint patterns i.e. arches, loops, whorls in mild to moderate covid19 positive patients.

METHODOLOGY

Study Design and Duration

- The study will be conducted on 60 mild to moderate patients with positive Covid19 RT PCR test. (Fever,cough ,O2 saturation levels above 90)

Inclusion Criteria

- Patients above 10 yrs
- RT PCR test positive
- Home quarantined and hospital admitted patients.

Exclusion Criteria

- RT PCR negative patients.
- Severe Covid19 infected patients.
- ICU admitted patients.

Study Protocol

- Informed consent will be taken.
- Patients are asked to wash both their hands with soap and water so as to remove any oil and dirt.
- The hand is placed on well illuminated surface and camera is adjusted and pictures are obtained.
- The photographs thus obtained will be analyzed by using Image J software.

The parameters analyzed for fingerprint patterns are :

- **Arches:** In this pattern the epidermal ridges cross the fingertip area from one side to other without any recurving.
- **Loop:** It is most common pattern seen. It is formed by a series of epidermal ridges that enter and exit the pattern area on the same side.

There are two types of loop :

- **1. Radial loop -** It is when ridges enter and leave on radial margin of the finger.
- **2. Ulnar loop –** it is when ridges enter and leave on ulnar margin of the finger.
- **Whorls:** These are pattern in which the ridges encircle a central core.

Statistics

- The collected data is entered in MS EXCEL and analysis is done using software –SPSS v.20
- Descriptive data is expressed as frequency and percentages.
- For statistical analysis of qualitative data chi – square test (X2) and for quantitative data independent samples t –test will be applied.
- Results will be tested at 5% level of significance.

Ethical Considerations

Informed verbal consent will be taken from the study participants .Anonymity will be maintained

Implications

- Very less research has been done on the dermatoglyphic features in Covid19 positive patients.
- Hence the present study is undertaken.
- To contribute to developing knowledge in the field of dermatoglyphics.

DISCUSSION:

- No similar studies were found.
- Most common finger print pattern in general population is loops followed by whorls.

RESULTS:

On examining 50 subjects bilateral fingerprint pattern, we found that most of the mild to moderate covid19 positive patients had loops followed by whorls.

Figures and Tables:

Figures:

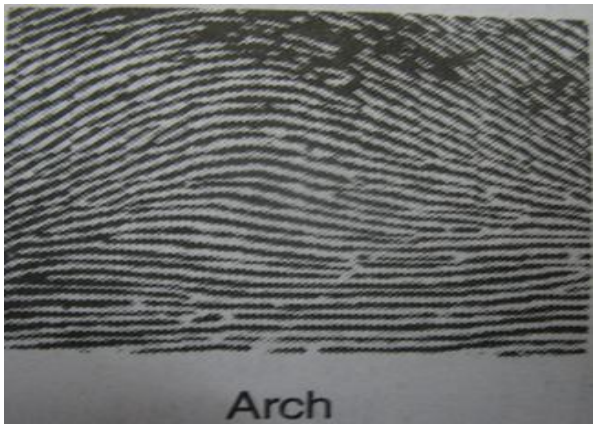

Figure 1 Fingerprint – Arch

Figure 2 Fingerprint - Plain Whorl

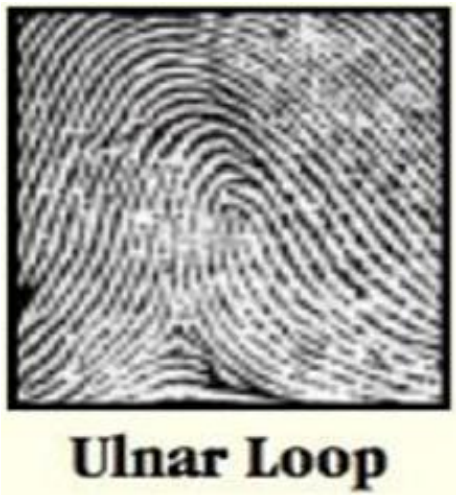

Figure 3 Fingerprint - Ulnar Loop

Figure 4 Fingerprint - Radial Loop

Figure 5 Right Thumb Whorl Pattern

Figure 6 Right Index Loop Pattern

Tables:

- **The Collected Data Is Entered In Frequency Table.**

RIGHT HAND	LEFT HAND									
GROUP	I	II	III	IV	V	I	II	III	IV	V
WHORLS	26	29	25	32	22	32	25	23	27	18
RADIAL LOOP	2	2	4	2	3	13	16	15	10	12
ULNAR LOOP	15	9	16	5	13	2	3	5	3	2
ARCHES	7	10	5	11	12	3	6	7	10	18

- **The Most Common Finger Pattern Observed Was Whorls.**

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