



ORIGINAL RESEARCH PAPER

Anatomy

STUDY OF DERMATOGLYPHICS MARKERS IN SCHIZOPHRENIA

KEY WORDS:
Dermatoglyphics , schizophrenia , fingerprinting

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ABSTRACT Dermatoglyphic is the study of epidermal ridges and their configurations on the fingers, palms and soles. Schizophrenia is a complex mental illness with multiple etiological factors. Prenatal insult to the developing foetus and genetic causes has been implicated as major risk factors for the genesis of schizophrenia, according to the neurodevelopmental model. As it has been established by many studies that dermatoglyphic markers reflect the possibility of development of genetic disorders, this study has tried to find any association between the markers and the disease. The objective of the study is to study the fingertip patterns of schizophrenia patients and compare it with fingertip patterns of normal controls.

INTRODUCTION

Dermatoglyphics is the study of epidermal ridges and their configurations on the fingers, palms and soles. They can be considered as the blueprint of the activities that occurred during fetal life. They reflect the neuro - ectodermal changes that were taking place in-utero as early as 12th week. Finger prints are imprints of epidermal ridges, which are formed in early embryonic life, during 10th to 16th week of intrauterine life and remain permanent during whole life. Dermatoglyphic patterns have polygenic inheritance and are affected by environmental factors in the uterus.¹

Schizophrenia is a complex mental illness with multiple etiological factors. Prenatal insult to the developing foetus has been implicated as a major risk factor for the genesis of schizophrenia, according to the neuro developmental model. As the brain and skin are ectodermal derivatives, insult to developing brain is reflected in several dermatoglyphic markers.²

MATERIAL AND METHODS

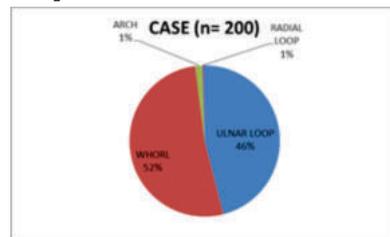
The study was conducted on random 200 Schizophrenic patients attending Psychiatric department of JLN Medical college and associated hospital , Ajmer and random 200 controls were taken from normal population. The material used were Kores finger print ink , ink roller, slab, paper for taking the prints, soap and water for removing the ink from the hands, protractor. The print was taken as follows. Finger print ink was used for taking the dermatoglyphic prints. A drop or two of the semi-solid ink was poured on a clean slab. This ink was evenly spread on the glass plate by a roller. The individual touched the ink on the slab by placing the left palm on its side and rolled it smoothly across the ink 180 degrees to the opposite side and then lifted his/her palms. He/she repeated the motion on paper, transferring the print. The paper was placed at the edge of the table to give the patient's hand space to rotate. The ink was removed from the hands with soap. Soon after the print was taken it was examined for details and clarity in different fingers. The fingertip patterns were analysed for the presence of ulnar loop, radial loop, whorl or arch.

The fingerprint patterns were studied in all 10 fingers for 200 schizophrenic patients and 200 normal controls. Parameters

were recorded separately for right and left hands and were compared between corresponding hands of cases and controls. Descriptive statistics are presented as mean and standard deviation for continuous data and number and percentage for categorical data . For comparing the means of two groups (cases vs controls), Z test was used. Categorical data was analysed by Chi- square test. p value of 0.05 or less was set for statistical significance.

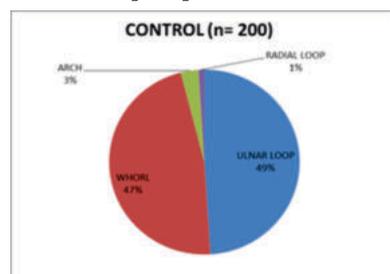
RESULT

1. Out of 200 schizophrenic cases , Whorl were the most frequent pattern found on left thumb (52%). Frequency of radial loop was found to be least in left thumb print pattern of schizophrenic patients.



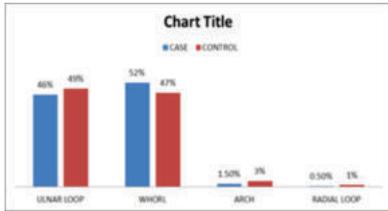
Graph 1. Pie Chart Showing Frequency Of Different Patterns On Left Thumb Print In Schizophrenic Patients

2. On observing 200 normal controls Ulnar loop is the most prominent pattern followed by whorls on analysing left thumb prints of normal controls. Frequency of radial loop was found to be least in left thumb print pattern of normal controls



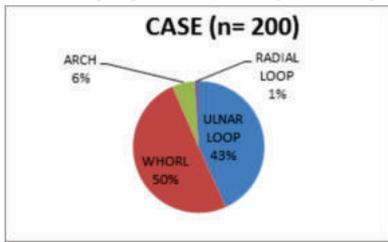
Graph 2. Pie Chart Showing Frequency Of Different Patterns On Left Thumb Print In Controls

3. On comparing left thumb print , whorl is most prominent pattern in schizophrenic patients whereas ulnar loop is the main pattern in normal controls.



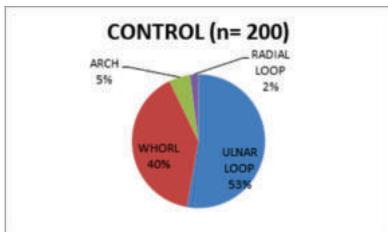
Graph 3. Bar Chart Showing Comparison Of Left Thumb Print Between Schizophrenic Patients And Controls

4. In 200 schizophrenic patients, frequency of whorls were found to be highest followed by ulnar loop on analysing left index finger pattern. Frequency of radial loop was found to be least in left index finger print of schizophrenics patients



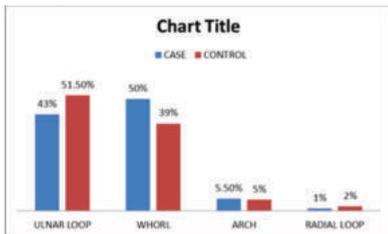
Graph 4. Pie Chart Showing Frequency Of Different Patterns On Left Index Finger Print In Schizophrenic Patients

5. Ulnar loop is the most prominent pattern followed by whorls on analysing left index finger print of 200 normal controls. Frequency of radial loop was found to be least in left index finger print of normal controls.



Graph 5. Pie Chart Showing Frequency Of Different Patterns On Left Index Finger Print In Controls

6. On comparing left index finger print, whorl is most prominent pattern in schizophrenic patients whereas ulnar loop is the main pattern in normal controls.



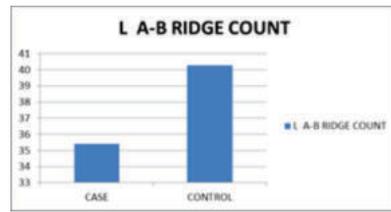
Graph 6. Bar Chart Showing Comparison Of Left Index Finger Print Between Schizophrenic Patients And Controls

7. The average left A-B ridge count were examined and it was found to be 40.285 ± 4.26 in normal controls and 35.43 ± 6.63 in schizophrenic patients but the difference was not significant as indicated by the p-value.

Comparison Of Left Total A-b Ridge Count Between Schizophrenic Patients And Controls

	CASE	CONTROL	P -VALUE
L A-B RIDGE COUNT (MEAN)	35.43 ± 6.63	40.285 ± 4.26	0.35

	CASE	CONTROL	P -VALUE
L A-B RIDGE COUNT (MEAN)	35.43 ± 6.63	40.285 ± 4.26	0.35



Graph 31. Bar Charts Showing Comparison Of Left A-b Ridge Count Between Schizophrenic Patients And Controls

DISCUSSION

In order to understand the intricate interactions of environmental, developmental, and genetic variables causing disease, the study of dermatoglyphics anomalies has been applied to a variety of chromosomal diseases, congenital malformations, neurological, and neuropsychiatric problems. Dermatoglyphics offer at least two major advantages as an aid to the diagnosis of medical disorders: (1) the epidermal ridge patterns on the hands and soles are fully developed at birth and, thereafter, remain unchanged for life; (2) scanning of the ridge patterns or recording their permanent impressions (i.e., prints) can be accomplished.¹

We studied the differences in a group of patients with schizophrenia and compared them with the healthy control groups.

P S Bhusaraddi et al in the study “The study on correlation of dermatoglyphics and schizophrenia (2019)” found in the study of 50 schizophrenics and 50 controls, mean a-b ridge count of left hand of schizophrenics (mean = 35.14) is decreased when compared to controls (mean = 35.48). Mean a-b ridge count of right hand of schizophrenics (mean = 34.62) is increased when compared to controls (mean = 34.12). These values are statistically not significant.³ In our present study too the mean left a-b ridge count of schizophrenic patients (mean = 35.43 ± 6.63) is decreased when compared to controls (mean = 40.285 ± 4.26) and this is not statistically significant.

Srinivas Murthy R et al in their study “Dermatoglyphic study of male schizophrenics (1997)” observed, Arches: schizophrenics - 4.33%, controls - 2.25%; Loops: schizophrenics - 54.33%, controls - 50.58%; Whorls: schizophrenics - 41.54%, controls - 47.17% in a study of 120 schizophrenics and 120 controls. In our present study we found that on fingertips of left thumb, Arches: schizophrenics - 1.5%, controls - 3%; Ulnar Loops: schizophrenics - 46%, controls - 49%; Whorls: schizophrenics - 52%, controls - 47%; Radial Loop: schizophrenics - 0.5%, controls - 1%, in a study of 200 schizophrenics and 200 controls

CONCLUSION

This study was done to explore the type of dermatoglyphics markers found in schizophrenic patients and compare them with controls. From the study it was noted that frequency of whorls were found to be highest followed by ulnar loop on analysing left thumb print in schizophrenic patients. Ulnar loop is the most prominent pattern followed by whorls on analysing left thumb prints of normal controls. Frequency of radial loop was found to be least in left thumb print pattern of schizophrenics patients. Frequency of radial loop was found to be least in left thumb print pattern of normal controls. On comparing left thumb print, whorl is most prominent pattern in schizophrenic patients whereas ulnar loop is the main pattern in normal controls. On comparing left thumb print pattern, radial loop is found to be least common in both schizophrenic patients and normal controls.

In schizophrenic patients, frequency of whorls were found to be highest followed by ulnar loop on analysing left index finger pattern. Ulnar loop is the most prominent pattern followed by whorls on analysing left index finger print of normal controls. Frequency of radial loop was found to be least in left index finger print of schizophrenics patients. Frequency of radial loop was found to be least in left index finger print of normal controls. On comparing left index finger print, whorl is most prominent pattern in schizophrenic patients whereas ulnar loop is the main pattern in normal controls. On comparing left index finger print, radial loop is found to be least common in both schizophrenic patients.

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