

Blood Group Association with Fingerprints in Coronary Heart Disease Patients

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ABSTRACT

Aim: To determine blood group variation and blood group association with fingerprints in Coronary Heart Disease patients and to support the evidence of court of law regarding identification of persons.

Study design: Observational Descriptive Study

Place and duration of study: Study was conducted at Akhtar Saeed Medical & Dental College, Lahore and data was collected from the PIC, Lahore from April 2012 to June 2012.

Methods: Finger prints were collected from the subjects after obtaining their informed consent in the month of 1 April, 2012 to 15 June, 2012. A total of 140 diagnosed patients were selected from the OPD of Punjab Institute of Cardiology and data were analyzed at Akhtar Saeed Medical & Dental College Lahore. Finger prints were recorded on a plain white paper with a stamp pad by plain and rolled method and each finger print was assigned by their Name, Age, and Sex, were recorded.

Results: Out of these one hundred and forty patients the majority of the patients were belonging to whorl pattern of finger prints i.e., 90(57%), and the most common blood group found in coronary heart disease patients was B+ve, 46(32.9%).

Conclusion: Whorls are the most commonly occurring finger-print pattern followed by Loop pattern, Arch and composite are the least common pattern. Blood group B positive is the most common and AB negative was the rarest blood group. Whorls are predominant in blood group B+ve, O+ve and AB+ve in coronary heart disease patients

Keywords: Fingerprints, coronary heart disease, blood group

INTRODUCTION

Recently, there has been an increased interest in biometric technologies that is human identification based on one's individual features. The various identification data used are finger-prints, handwriting, bite marks, DNA fingerprinting etc¹. Fingerprints are constant and individualistic and form the most reliable criteria for identification^{2,3}. The type of fingerprint is unique based on the genetical characteristics of each individual. The analysis of the shape of lines on the fingers of hand and foot is called dermatoglyphic. In the recent decades, a considerable improvement has been achieved in the concept of relation between the types of pattern of lines on the fingers and some individual disorders^{4,5,6,7}. Genetic predisposition is one

of the known risk factors, and studies have been previously done to establish the relation between dermatoglyphic pattern and cardiovascular diseases. Some studies also reports medical literature regarding the relation between dermatoglyphic pattern as an indication of genetic susceptibility in the incidence of Myocardial Infarction^{8,9}. Ischemic Heart Disease (IHD) is the most common, serious, chronic, life-threatening illness in the developed world. High fat and energy rich diet, smoking, and a sedentary life-style are associated with its emergence. Obesity, insulin resistance, and type 2 Diabetes Mellitus are powerful risk factors for Ischemic Heart Disease. A substantial increase in Ischemic Heart Disease is projected worldwide, and Ischemic Heart Disease is likely to become the most common cause of death worldwide⁸. Coronary artery disease (CAD) is the most important cause of mortality and morbidity in the world.¹⁰ Epidermal ridges are formed between 11th and 24th week of gestation; after this period epidermal ridges do not change¹¹. The critical growth of the brain is also occurring during this period. Since the skin and brain develop from the same ectoderm, dermatoglyphic variations are informative for early developmental brain disturbances¹². There are three basic patterns of finger prints Named Arch, Loop, and Whorl¹³.

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The ABO blood groups were discovered by Karl Landsteiner in 1901. Further studies on the ABO blood group system, by the other workers, suggested that the blood groups were inherited. But, the exact manner of inheritance of the ABO blood group was revealed by Bernstein (1924)^{14,16}.

MATERIALS & METHODS

Finger prints were collected from the patients after obtaining their informed consent in the month of 1 April, 2012 to 15 June, 2012. A total of 140 known case of coronary heart disease patients were selected from the OPD of Punjab Institute of Cardiology and data were analyzed at Akhtar Saeed Medical and Dental College Lahore. Finger prints were recorded on a plain white paper with a stamp pad by plain and rolled method and each finger print was assigned by their Name, Age, Sex, and were recorded on the Proforma. Ethical clearance was obtained from the institutional Ethical Committee and Medical Superintendent of Punjab Institute of Cardiology. The study design was observational descriptive one. Patients of either sex diagnosed as a case of Coronary artery disease and belonging to and any ridge pattern of finger prints were included in the study. All those patient suffering from any chronic skin disease e.g., eczema, leprosy and chronic dermatitis, having scars, congenital or acquired anomalies due to trauma on fingers were excluded from this study.

A proforma was designed in which data including name, age, and sex were entered. Impression of all fingers and thumbs of both hands were taken. The impressions were taken by simple plain and rolled method. Screening of finger prints were done by using magnifying lens and scanner. Based on this data, the case had been diagnosed by direct supervision of a cardiologist. The dermatoglyphic pattern in patients with myocardial infarction is an interesting matter and little information is available about this relationship. The objective of this study to determine blood group association with fingerprints in Coronary Heart disease patients and to support the evidence of court of law regarding identification of persons.

RESULTS

Analysis in this study was descriptive .A total of one hundred and forty patients participated in this study which were all known case of coronary heart disease. Out of these one hundred and forty patients the majority of the patients were belonging to whorl pattern of finger prints i.e., Ninety 57% where as the number of patients belonging to Loop pattern was Forty 29% pattern of Arch and composite was same i.e., Ten 7% each.

Table 1: Pattern of fingerprints in CHD

of finger Print	No. of patterns (Frequency)	%age
Arch	10	7
Loop	40	29
Whorl	80	57
Composite	10	7
Total	140	100

Table-2 Blood groups in Coronary Heart disease

Blood groups	Frequency	%	Valid%	Cumulative%
Valid				
A+ve	16	11.4	11.4	11.4
A-ve	5	3.6	3.6	15.0
B+ve	46	32.9	32.9	47.9
B-ve	8	5.7	5.7	53.6
AB+ve	21	15.0	15.0	68.6
AB-ve	4	2.9	2.9	71.4
O+ve	33	23.6	23.6	95.0
O-ve	7	5.0	5.0	100.0

The most common blood group found in coronary heart disease patients was B+ve ,46(32.9%), second common blood group was O+ve 33,(23.6%) and the third common blood group was AB+ve 21,(15%). Least common blood group was A+ve 16(11.4%), which was followed by B-ve 8,(5.7%) and O-ve containing 7(5%). Very least blood groups were A-ve, 5(3.6%), which was followed by AB-ve containing 4(2.9%) cases only. There is need to develop a detailed and vast study to explore the association of finger print pattern with Ischemic Heart disease. This study offered sensible weighting on distribution of finger print pattern among the coronary heart disease patients. Limitations of study was it was only limited to Punjab Institute of Cardiology OPD patients and Limited only to coronary Heart disease patients. The study was considered on small and selected area, if it will be conducted on Nation wide on larger scale findings might be different.

Pattern of Finger Print	A+ve	A -ve	B +ve	B -ve	AB +ve	AB -ve	O +ve	O-ve	Total
Arch	0	0	01	0	0	0	0	0	01
Loop	7	1	11	01	06	0	11	03	40
Whorl	7	4	30	07	15	03	21	04	91
Composite	2	0	4	0	0	1	1	0	08

DISCUSSION

The role of finger printing should not be underestimated and the patterns of finger prints are unique to each and every individual due to their uniqueness they can be used to identify the culprits at crime scene and blast injuries and in mass disaster injuries and as well as for national identification¹⁷. A number of studies have indicated dermatoglyphic correlation in a large number of genetic disorders, which include diabetes mellitus¹⁸, Schizophrenia¹⁹, Congenital heart disease²⁰, and down syndrome²¹. Coronary artery disease is the most important cause of mortality and morbidity in the world²². In the present study, very highest percentage of whorl pattern was observed in blood group B+ve, while the percentage of whorl was lowest in blood group AB-ve. Second highest percentage of pattern was loop in B+ve and in O+ve blood groups, while the percentage of Loop was lowest in A-ve, and in B-ve patients. Third highest percentage of pattern was composite in B+ve blood group, while it was lowest in AB-ve and in O+ve patients. Another study in Iran showed arch type fingerprint was significantly increased roughly 2 times in patients with MI in contrast to the control group⁽¹¹⁾. The reason for such type of result might be due to sampling fluctuation, or the sample size is not adequate, sampling error or these two variables are independent and do not effect each other. Similar studies should be conducted on a larger sample at the National level so as to increase the accuracy of prediction²⁴. Regarding the whorl pattern a study by Rashad M.N on Japanese subjects, showed individuals with which shows significantly higher frequency of true whorls and correspondingly lower frequency of Ulnar Loop than the control may be supported the same²³. Where as another study done in Karachi, whorl pattern is predominant 48% followed by Loops 42.5% and than Arches 4.8% which is similar to the study done in India²⁵.

CONCLUSION

The findings of the study can be concluded as follows:

- Each fingerprint is unique hence it can be very effectively used as an evidence for identification in the court of law.
- Whorls are the most commonly occurring fingerprint pattern followed by Loop pattern, Arch and composite are the least common pattern.
- Blood group B positive is the most common and AB negative was the rarest blood group.

- Whorls are predominant in blood group B+ve, O+ve and AB+ve in coronary heart disease patients

RECOMMENDATIONS

1. Similar studies should be conducted on a larger sample at a National level so as to increase the accuracy of prediction.
2. There is a need to evaluate the finger printing in genetical diseases along with familial diseases
3. There is a need to establish Finger printing bank for research purpose.
4. There should be finger printing pooling in bank of patients especially in genetical and familial disorders.

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