

ABO Blood Group Association with Dactylography in Hypertensive Patients

MUDASER HUSSAIN ABBASI¹, ALTAF HUSSAIN², SONO MAL³

ABSTRACT

Aim: To determine fingerprints association with blood groups in hypertensive 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 Poonch Medical College, Rawlakot and data was collected from the Punjab Institute of Cardiology, 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 113 diagnosed patients were selected from the OPD of Punjab Institute of Cardiology and data were analyzed at Poonch Medical College Rawlakot. 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 & Thirteen patients the majority of the patients were belonging to whorl pattern of finger prints i-e. Sixty five 65% where as the number of patients belonging to Loop pattern was twenty eight 28% and pattern of composite was six 6% only and no any patient of arch pattern was found.

Conclusion: Whorls are the most commonly occurring finger-print pattern followed by Loop pattern and blood group B positive is the most prevalent blood group in Hypertensive patients and AB negative was the rarest blood group

Keywords: Fingerprints, coronary heart disease, blood group

INTRODUCTION

Dactylography are the impressions of pattern formed by the papillary or epidermal ridges of the fingertips¹. It is based on principle that the individual peculiarities of the patterns formed by the arrangement of the papillary or epidermal ridges on the fingertips are absolutely constant and persists throughout life from infancy to old age and that the patterns of no two hands resemble each other¹. These ridges are classified in to four main groups including Arch, Loop, Whorl and Composite¹ These epidermal ridges are formed between 11th and 24th week of gestation; after this period epidermal ridges do not change throughout the life². The critical growth of the brain is also occurring during this period. Since the skin and brain develop from the same ectoderm, Dactylogram variations are didactic for early developmental brain disturbances³. Hence these epidermal ridges could be used to indicate gene or chromosomal abnormalities⁴. Genetic predisposition is one of the known risk factors, and studies have been previously done to establish the relation between dermatoglyphic pattern and cardiovascular diseases⁵.

¹Associate Professor, ³Assistant Professor, Department Forensic Medicine & Toxicology, Poonch Medical College, Rawlakot.

²Senior Registrar Cardiology, Avicenna Medical College, Lahore.
Correspondence to Dr. Mudaser Hussain Abbasi Email: Forensicdoctor786@gmail.com

It is estimated that hypertension causes 7.1 million deaths globally (13% of total)⁶. In developing countries, hypertension is on the rise due to the increase in urbanization and adoption to western lifestyles⁷. The dactylographic pattern in patients with hypertension is an fascinating affair and little information is available about this relationship. To fill the gap this study was planned to determine fingerprints association with blood groups in hypertensive patients and to support the evidence of court of law regarding identification of persons.

MATERIALS AND METHODS

Dactylograms were collected from the patients after obtaining their informed consent in the month of April, 2012 to June, 2012. A total of 113 determined patients were selected from the outdoor patient department of Punjab Institute of Cardiology and data was scrutinized at Poonch Medical College Lahore. The study design was Observational cross sectional study. Dactylograms were recorded on a plain white paper with a stamp pad by plain and rolled method and each dactylogram was allocated by their Name, Age, Sex, and Blood groups were docketed on the Proforma. Ethical clearance was acquired from the institutional Ethical Committee and MS of Punjab Institute of Cardiology. Patients of either sex detected

as a case of Hypertension, belonging to any ABO blood group and any ridge pattern of dactylograms were included in the study. Day Patients endure from any chronic skin disease e.g., eczema, leprosy and chronic dermatitis, having scars, congenital or acquired anomalies due to injury on fingers and not determined as case of Hypertension were excluded from the study. A proforma was drafted in which data including name, age, and ABO blood groups were entered. Effect of all fingers and thumbs of both hands were taken. The impacts of all fingers and thumb were taken by simple plain and rolled method. Scrutinization of finger prints were done by using magnifying lens and scanner. Each and every patient of Hypertension had been diagnosed by cardiologist.

RESULTS

A total of one hundred & thirteen patients participated in this study which were all known case of Hypertensive disease. Out of these one hundred & Thirteen patients the majority of the patients were belonging to whorl pattern of finger prints i.e. Sixty five 65% where as the number of patients belonging to Loop pattern was twenty eight 28% and pattern of composite was six 6% only and no any patient of arch pattern was found. Table-1 showed the most common blood group found in Hypertensive patients

was B+ve ,36(31.9%), second common blood group was O+ve 27,(23.9%) and the third common blood group was AB+ve 16,(14.2%). Least common blood group was A+ve 13(11.5%), which was followed by B-ve 8,(7.1%) and O-ve containing 6(5.3%). Very least blood groups were A-ve, 3(2.7%), which was followed by AB-ve containing 4(3.5%) cases only. Table-2 showed that very highest percentage of Hypertensive whorl pattern was observed in blood group B+ve, while the percentage of whorl was lowest in blood group A-ve and 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, B-ve and O-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. There is need to plan a elaborative and vast study to explore the association of blood groups with finger print pattern in Hypertensive patients. This study offered sensible weighting on distribution of finger print pattern among the hypertensive patients. Limitations of study it was only limited to Punjab Institute of Cardiology OPD patients and Limited only to Hypertension patients. The study was considered on small and selected area, if it will be conducted on Nationwide on larger scale findings might be different.

Table 1: ABO in hypertensive patients

Blood Groups	Frequency	Percent	Valid Percent	Cumulative Percent
A+ve	13	11.5	11.5	11.5
A-ve	3	2.7	2.7	14.2
B+ve	36	31.9	31.9	46.0
B-ve	8	7.1	7.1	53.1
Valid AB+ve	16	14.2	14.2	67.3
AB-ve	4	3.5	3.5	70.8
O+ve	27	23.9	23.9	94.7
O-ve	6	5.3	5.3	100.0
Total	113	100.0	100.0	

Table 2: Patten of fingerprints with blood groups

Pattern of finger print	A+ve	A -ve	B +ve	B -ve	AB +ve	AB -ve	O +ve	O-ve	Total
Arch	0	0	00	0	0	0	0	0	00
Loop	6	1	9	01	04	0	09	02	32
Whorl	5	2	24	07	12	03	17	04	74
Composite	2	0	3	0	0	1	1	0	07

DISCUSSION

A many studies have indicated dactylogram correlation in a large number of genetic disorders, which include diabetes mellitus⁸, Schizophrenia⁹, Congenital heart disease¹⁰, and down syndrome¹¹. Coronary artery disease is the most important cause of mortality and morbidity in the world¹². In modern

medicine, association of blood groups to disease has become an interesting area of research because of a known genetic connection of specific blood groups to certain diseases, in certain population. Thus far, several reports have suggested important associations found between ABO blood groups with Hypertension^{13,14,15}. In the present study, very highest percentage of Hypertensive whorl pattern was

observed in blood group B+ve, while the percentage of whorl was lowest in blood group A-ve and 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, B-ve and O-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. A study by Rashad M.N on Japanese subjects, showed significantly higher number of true whorls and lower frequency of Ulnar Loop than the control may be supported the same¹⁸. A study in Karachi, showed whorl pattern is predominant 48% followed by Loops 42.5% and then Arches 4.8% which also shows same results as study done in India¹⁹. Another study of Iran showed Arch type fingerprint was significantly increased in MI patients as compared to the control group¹⁶. The reason for such type of result might be due to sampling variation, or the sample size is not sufficient, sampling error or these two variables are unconventional and do not effect each other. Similar studies should be organized on a larger sample at the National level so as to enhance the accuracy of prediction¹⁷.

CONCLUSION

- Whorls are the most commonly occurring fingerprint pattern followed by Loop pattern in hypertensive patients.
- Blood group B positive is the most prevalent blood group in Hypertensive patients and AB negative was the rarest blood group.
- Whorls finger prints are predominant in blood group B+ve, O+ve and AB+ve in hypertensive patients
- Each fingerprint is unique hence it can be very effectively used as an evidence for identification in the court of law.

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