Indian Internet Journal of Forensic Medicine & Toxicology
Vol. 18, No. 3, July-September 2020, 47-49
DOI : 10.5958/0974-4487.2020.00009.7

IndianJournals.com
A product of Diva Enterprises Pvt. Ltd.

Original Article

Qualitative Analysis of Pattern of Finger Print in Relation to Gender and Blood Group

V. Kushwaha, R. Dev*, S. Verma, P. Awasthi, A. Pathak, A. Yadav and A. Shahi

Assistant Professor, Department of FMT, GSVM Medical College, Kanpur, Uttar Pradesh, India.
*Corresponding author email id: dr.rahuldev@hotmail.com

Received: 02-01-2020; Accepted: 12-01-2020

ABSTRACT

Identification of a person means the determination of the individuality or recognition of that person. A fingerprint system also known as dactylography, is based on the principle that the skin of the balls of the fingers and thumb is covered with characteristics ridges and grooves, the pattern of which makes absolute identification possible. These pattern have major design which enables them to be placed in group for primary classification, and a considerable amount of final detail – of branching and coalescence of ridges, of island, core and delta arrangement permitting subgrouping, and an unlimited quantity of extremely fine pore details along individual ridges. In this study an attempt has been made to analyze their correlation with blood group and gender of individuals. This prospective study was carried out over a period of 6 months (May 2019-October 2019) among 100 medical students (50 male and 50 female) belonging to the age group of 21 -25 years of GSVM Medical College, Kanpur (U.P.) India, Results show that each fingerprint is unique; loops are the most commonly occurring finger print pattern while arches are the least common. Males have a higher incidence of whorls and females have a higher incidence of loops. Loops are predominant in blood group A while whorls are more common in blood group B individuals.

Keyword: Types of fingerprints, Blood group, Gender

INTRODUCTION

The first recorded instance of a fingerprint having been used to prove the identity of a murderer was in the Argentine in 1892. The modern system of dactylography depends upon the development by the time of birth of a fine pattern of ridges on the skin of the balls of the fingers and thumbs, parts of the palms and the soles of the feet. The credit of introducing the finger print to crime records undoubtedly lies with two Englishmen, Dr. Henry Faulds and Sir William Herschel [1]. Fingerprint classified primarily as loops (about 67%) of which all but some 5% are "ulnar", i.e. open out towards the ulnar border of the arm, whorls (about 25%) and arches (6-7%) or more composite forms comprising the remaining 1-2% [1].

Fingerprints are constant and individualistic and form the most reliable criteria for identification [2].

The objective of this study is to determine blood group by taking fingerprint of the participants and know the association between their finger print and blood group. In loop pattern, the ridges about the centre of the print arrange themselves somewhat in the form of a hairpin, the ends of which point more or less in a downward

slanting direction. There are 2 fixed points in all the prints of the loops i.e. the delta and the core.

In the whorls the ridges form intricate patterns than in arches and loops. The ridges may take a clockwise or anticlockwise turn. There are two deltas both of which are used for classification. While in arch, the ridges run from one side of the print to the other and in an arch like pattern. The ridges terminate at the sites of the print approximately equidistant to each other and do not make a backwards turn [3,4].

MATERIAL AND METHOD

Written consent from students has been taken. This study was carried out over a period of 6 months (May 2019 – October 2019) among medical students of GSVM Medical College, Kanpur (U.P.) India. Total 100 students (50 males and 50 females) in the age group of 21-25 years participated in this study.

Those students with any deformity on their fingers were excluded from this study. Each student was asked to wash his hand properly with soap and water and dry them using a towel. They were then asked to press his fingertip on the stamp pad and then to the paper to transfer fingerprint impression. In this way, the plain fingerprints of all the ten digits were taken separately on the same sheet of paper.

The fingerprint patterns were studied with the help of magnifying lenses and were identified as : loops, whorls and arches based on the appearance of ridge lines according to Henry's system of classification.

After taking their fingerprints, the details of the blood group were noted from their college identity cards.

RESULT

A total of 100 subjects participated in the study out of which 50 were male and 50 female. Majority of the subjects 34 (34%) in the study belonged to the blood group B followed by blood group A, O and AB which were 32 (32%), 24 (24%) and 10 (10%) respectively (Table 1).

While blood group B was most common among males 24 (48%), blood group A was the most common in females 22 (44%) (Table 2&3).

Fingerprint pattern analysis showed that loops were the most common pattern in this study 580(58%) followed by Whorls 340(34%) while arches were present in a smaller percentage 80(8%) of the study group (Table 4).

Frequency of loops was found to be higher in females 304 (60.8%) than in males 276 (55.2%) whereas whorls were more frequent in males 188(37%) as compared to female 152 (30.4%). 36 (7.2%) of arches were present in males and 44 (8.8%) in females. (Table 5 & 6)

Loops pattern was higher in A blood grouping of 188 (32.41%) followed by B 172(29.65%), O 154(26.55%),

Table 1: Type of Blood Group in Both Subject

Type	Number	Percentage
A	32	32
B	34	34
AB	10	10
O	24	24
Total	100	100

Table 2: Type of Blood Group among male

Pattern	Number	Percentage
A	10	20
B	24	48
AB	06	12
O	10	20
Total	50	100

Table 3: Type of Blood Group Among Female

Type	BG	Percentage
A	22	44
B	10	20
AB	04	08
O	14	28
Total	50	100

Table 4: Fingerprint pattern in both subject

Pattern	Number	Percentage
Loops	580	58
Whorls	340	34
Arches	80	08
Total	1000	100

Table 5: Pattern of Finger Print among Female

Pattern	Number	Percentage
Loops	304	60.8
Whorls	152	30.4
Arches	44	8.8

AB 66 (11.37%) respectively. Whorl was higher in B 148 (43.53%) followed by A 114 (33.52%) O 54 (15.88%) and AB 24 (7.05%). Arch pattern was equal in blood group A and B 20 (25%), 20 (25%). Subjects with O blood group have higher 32 (40%) incidence of arch pattern and AB have lowest 8 (10%) (Table 7).

DISCUSSION AND CONCLUSION

The present study shows that there is an association between distribution of fingerprint pattern, blood group and gender. Majority of the subject in the study belonged to blood group B; followed by blood group A, O and AB. Loop pattern was higher in blood group A, this finding is in accordance with the study conducted by Rastogi et al and Bharadwaj et al. While whorl pattern was higher in B followed by A, O and AB.

Arch pattern was equal in blood group A and B. Subject with O blood group have higher incidence of arch pattern and AB have lowest.

Rastogi *et al.* conducted a study among 200 medical student which revealed blood group A had a higher frequency of loops, while whorls were more common in blood group O [5].

Bharadwaj *et al.* conducted a study during 2000-2001 on 300 medical student with different ABO blood groups in Rajasthan which revealed that individual with blood group A have more loops, while that of blood group AB had more of word [6].

The present study also reveals that frequency of loops is greater in females as compared to a higher frequency of whorls in males. Arches were found to be more frequent in female.

The findings of the study can be concluded as follows.

Loops are the most commonly occurring fingerprint pattern and arches are the least common. Loops are predominant in blood group A, B, O and AB respectively. Whorls are more common in blood group B. Arches are more common in blood group O. Blood group B was most common among male while blood group A was most common in females. Male have a higher incidence of whorls and females have a higher incidence of loops. Thus prediction of gender and blood group of a person is possible based on his finger print pattern.

REFERENCES

[1] Taylor's Principles and Practice of Medical Jurisprudence. 12th Ed J & A Churchill Ltd, 1965:144-157.

[2] Pillay VV. Text Book of Forensic Medicine and Toxicology. 18thEd. Hyderabad: Paras Medical Publishers, 2017.

[3] Parikh's Text Book of Medical Jurisprudence, Forensic Medicine and Toxicology. 6th Ed. CBS Publishers and Distributors, 2010.

[4] Subramanyan BV. In: Modi's Medical Jurisprudence & Toxicology. 24th Ed New Delhi: Butterworths India, 2012.

[5] Rastogi P and Pillai R Keerthi. A study of Finger Print in relation to gender and blood group. JIAFM. 2019;32(1):11-14.

[6] Bharadwaja A, Saraswat PK, Agarwal SK. Banerjee P, Bhardwaj S. Pattern of finger print in different ABO blood groups. Journal of Forensic Medicine & Toxicology. 2004;21(2):49–52.

How to cite this article: Kushwaha V, Dev R, Verma S, Awasthi P, Pathak A, Yadav A and Shahi A. Qualitative Analysis of Pattern of Finger Print in Relation to Gender and Blood Group. Indian Internet Journal of Forensic Medicine & Toxicology 2020; 18(3): 47-49.