ORIGINAL ARTICLE

Gender Variation of Finger Print Pattern Variation among the Patients of Poliomyelitis

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ABSTRACT

Aim: To describe gender variation of finger prints pattern in poliomyelitis 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 Avicenna Medical College, Lahore and data was collected from the Medical OPD of Children Hospital and Institute of Child Health, Lahore
Methods: Finger prints were collected from the subjects after obtaining their informed consent from month of November 2011 to August 2012. A total of 100 diagnosed patients were selected from the Medical OPD of Children Hospital and Institute of Child Health, Lahore and data were analyzed at Avicenna Medical College Lahore. Finger prints were recorded on a plain white paper with a stamp pad by plain and rolled method.
Results: One hundred patients participated in these studies which were all known case of poliomyelitis. Out of these one hundred patients the majority of male patients were belonging to Loop pattern of finger prints i.e., 30(30%) where as the second most common pattern in males were Whorl 15%, and third common pattern was composite 10% and very least pattern was Arch 5% only. In females most common pattern was whorl 18%, second most common was loop 16% and third pattern was composite was only 6%.
Conclusion: Each fingerprint is unique hence it can be very effectively used as an evidence for identification in the court of law. Majority of male patients were belonging to Loop pattern of finger prints followed by Whorl pattern, and third common pattern was composite and very least pattern was Arch.
Keywords: Gender variation, finger print, poliomyelitis

INTRODUCTION

Poliomyelitis (polio) is a highly infectious viral disease, which mainly affects young children. Polio (poliomyelitis) mainly affects children under five years of age. The virus is transmitted through contaminated food and water, and multiplies in the intestine, from where it can invade the nervous system. Many infected people have no symptoms, but do excrete the virus in their faeces, hence transmitting infection to others.(1) Poliomyelitis often called polio or infantile paralysis is an acute, viral, infectious disease spread from person to person, primarily via the fecal-oral route[2]. The term derives from the Greek *poliós* meaning "grey", *myelós* "marrow", referring to the grey matter of the spinal cord, and the suffix *-itis*, which denotes inflammation[3]. Initial symptoms of polio include fever, fatigue, headache, vomiting, stiffness in the neck, and pain in the limbs. In a small proportion of cases, the disease causes paralysis, which is often permanent. Polio can only be prevented by immunization.(1) A global effort to eradicate polio began in 1988, led by the World Health Organization, UNICEF, and The Rotary Foundation[4]. These efforts have reduced the number of annual diagnosed cases by 99%; from an estimated 350,000 cases in 1988 to a low of 483 cases in 2001, after which it has remained at a level of about 1,000 cases per year (1,606 in 2009)[5,6,7]. A number of eradication milestones have already been reached, and several regions of the world have been certified polio-free. The Americans were declared polio-free in 1994[8]. In 2000 polio was officially eliminated in 36 Western Pacific countries, including China and Australia[9,10]. Europe was declared polio-free in 2002[11]. As of 2012, polio remains endemic in only three countries: Nigeria, Pakistan, and Afghanistan[5,12]. Although it continues to cause epidemics in other nearby countries due to hidden or reestablished transmission[12]. A finger pint is the pattern on the inside of the finger in the area between

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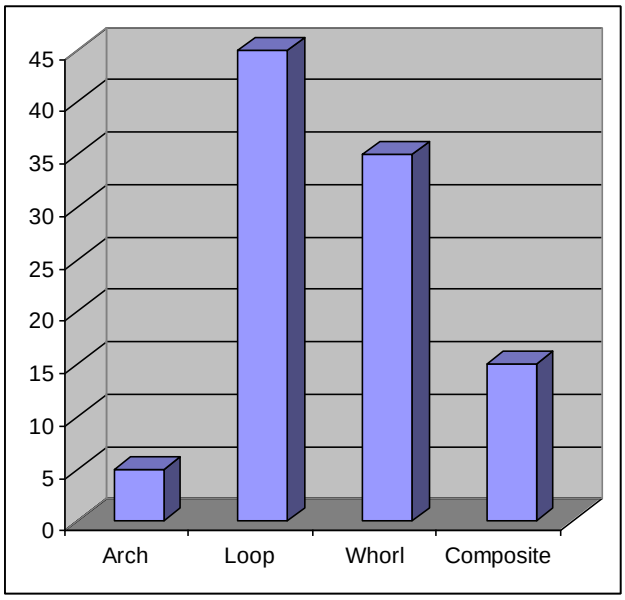
the tip and the first joint, and stays the same from the day of a person's birth to the day he dies. These two facts make fingerprints very useful in identifying somebody beyond any doubt, and this is why police forces find them invaluable in tracking down a criminal[13]. Epidermal ridges are formed between 11th and 24th week of gestation; after this period epidermal ridges do not change[14]. 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 disturbances[15]. There are three basic patterns of finger prints Named Arch, Loop, and Whorl[16]. Arch can further be classified into tented and loop arches with further sub divisions into Radial and Ulnar variety. The whorls type is divided into five sub groups- Simple, central packed loop, twinned loop, lateral packed loop and accidental[17]. The pattern area is the part of a loop or whorl which contains the core delta and ridges. Total finger ridges count is the most inheritable feature in dermatoglyphics. The most common pattern, a simple Loop (60-70%) is characterized by single triradius, is not advantageous for tactile perception and precession group. Whorl has two triradi yielding two central, while simple arches have no true triradi, resulting in zero count[18,19,20]. Finger prints are also useful in medical diagnosis of genetically inherited diseases and in detection of crimes. Finger prints collected at a crime scene can be used to identify perpetrator of crime, victims and other persons who touched the surface. Finger prints scan can be used to validate electronic registration, cash less catering, library access especially in school and colleges and office attendance. The secretions in the fingerprints contain residues of various chemicals and metabolites which can be detected and used for the forensic purposes[21]. A considerable improvement has been achieved in the concept of relation between the type of patterns of lines on the fingers and some individual disorders[19,20,21,22]. The dermatoglyphic pattern in patients of poliomyelitis is an interesting matter and little information is available about this relationship. The objective of this study is to find the association between the male and female finger print pattern in poliomyelitis disease and helps in the evidence of court of law regarding identification of persons.

MATERIALS AND METHODS

Finger prints were collected from the patients after obtaining their informed consent in the month of November, 2011 to August 2012. A total of 100 known case of poliomyelitis patients were selected from Medicine OPD of children hospital and Institute of Child Health and data were analyzed at Avicenna Medical 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. The study design was descriptive one. Patients of either sex diagnosed as a case of Poliomyelitis subjects belonging to and any ridge pattern of finger prints were included in the study. Patients 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.

RESULTS

Pattern



Pattern of finger print	Male	Female
Arch	05	0
Loop	30	16
Whorl	15	18
Composite	10	06
Total	60	40

Analysis in this study was descriptive .A total of one hundred patients participated in this study which were all known case of poliomyelitis. Out of these one hundred patients the majority of male patients were belonging to Loop pattern of finger prints i.e., 30(30%) where as the second most common pattern

in males were Whorl 15%, and third common pattern was composite 10% and very least pattern was Arch 5% only. In females most common pattern was whorl 18%, second most common was loop 16% , and third pattern was composite was only 6%. There is need to develop a detailed and vast study to explore the association of finger print pattern with poliomyelitis patients. This study offered sensible weighting on distribution of finger print pattern among the poliomyelitis patients.

DISCUSSION

A number of studies have indicated dermatoglyphic correlation in a large number of genetic disorders, which include diabetes mellitus[23], Schizophrenia[24], Congenital heart disease[25], and down syndrome[26]. Identification is a set of individual physical characteristics, functional or psychic, normal or pathological that defines an individual[27]. Dermatoglyphic is a scientific method for anthropological, medico legal and genetic studies.[27] In our study we found Out of these one hundred poliomyelitis patients the majority of male patients were belonging to Loop pattern of finger prints i.e., 30(30%) where as the second most common pattern in males was Whorl pattern i.e., 15%, and third common pattern was composite 10% and very least pattern was Arch 5% only. In females most common pattern was whorl 18%, second most common pattern was loop 16% , and third pattern was composite was only 6%. 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[28]. Limitations of study it was only limited to Medical OPD of Children Hospital and Institute of Child Health patients and Limited only to poliomyelitis patients. The study was conducted on small and selected area, if it will be conducted on Nationwide on larger scale findings might be different and useful. 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 identification[24].

CONCLUSION

- Each fingerprint is unique hence it can be very effectively used as an evidence for identification in the court of law.
- Majority of male patients were belonging to Loop pattern of finger prints followed by Whorl pattern and third common pattern was composite and very least pattern was Arch. In females most common pattern was whorl followed by Loop and third pattern was composite.

Recommendations:

- Similar studies should be conducted on a larger sample at a National level so as to increase the accuracy of prediction.
- There is a need to evaluate the finger printing in genetical diseases along with familial diseases.
- There is a need to utilize NADRA fingerprinting data bank for research purpose.
- There should be finger printing data bank of patients especially in genetical and familial disorders in hospitals for research purpose.

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