ORIGINAL ARTICLE

Cheiloscopic Variation among the Students of Avicenna Medical College Lahore

MUDASER HUSSAIN ABBASI[1], MUHAMMAD AMIN MENGAL[2], RANA MUHAMMAD AKHTAR[3], *HAROON HABIB[4], MUHAMMAD HAMMAD[5], YASIR ALI BHATTI[6], RIZWAN AHMED[7], ERUM ABBASI[8]*

ABSTRACT

Objective: Objective of study was to evaluate common pattern of lip prints among the MBBS 3rd year students

Study design: Observational Descriptive study

Place and duration of study: The present study was conducted in the Avicenna Medical College Lahore in the department of Forensic medicine and Toxicology from February 2012 to April 2012

Materials and methods: Lip prints were collected from the subjects after obtaining their informed consent in the month of February-April 2012. A total of 100 MBBS, 3rd year students of the Avicenna Medical College Lahore participated in the study. Lip prints were recorded on a white paper and each lip print was assigned by their serial numbers and roll no. of student. The Name and general information of the students like Age, Sex and Blood groups and Ethnicity were recorded on the Proforma. Patterns of lip prints were classified according to Suzuki and Tsuchihashi classification. All the subjects were in the age range of 19-25 years consisting of 30 male and 70 female students. Ethical clearance was obtained from the institutional Ethical Committee.

Results: The most common pattern of lip prints was long Vertical groove or Type-I ,sixty students (60%),Second common pattern was the Type-II Branching grooves, twenty (20%),Type-II of short vertical grooves were only eight (8%),Second least common pattern which were found to the type-III and type-IV each group was consisting of five students (5%),Very least pattern of lip print was found to be Other type grooves or type-V ,only two (2%) students were found to be belonging to this group.

Conclusion: Lip print pattern is unique for each of the examined individual. This finding is hoped to be useful in the identification process, both in civil and criminal cases.

Key words: Cheiloscopic Variation, lip prints, Tsuchihashi classification

INTRODUCTION

With the advancing age Forensic science and law enforcement agencies demanding the latest technologies which helps to find out the curtilage which are found on a crime scene and helps to nexus the criminal with the crime. Establishing a person's identity is very difficult cognitive process in which the study of teeth, fingerprinting and DNA techniques are used and giving a fast and get one's hand in the process of identification[1].

There are many new famous techniques and methods has been introduced for the human identification, in which the most interesting technique for the human identification which evolve from the out law and forensic practice, is the recognition of human lip patterns[2]. Cheiloscopy is a forensic investigation technique that deals with identification of humans based on Lip traces[3]. Labial mucosa a part of oral mucosa is not smooth like buccal mucosa or soft palate. It has many elevations and depressions forming a characteristic pattern called "Lip Prints". The examination of these Lip Prints is called "Cheiloscopy"[4]. Where identification is concerned, the mucosal area of the lip holds the most interest. This area, also called Klein's zone, is covered with wrinkles and grooves that forms a characteristic pattern— the lip print[5]. The importance of Cheiloscopy is linked to the fact that lip prints are unique to one person, except in monozygotic twins[5,6,7]. Like fingerprints and palatal rugae, lip grooves are permanent and unchangeable. It is possible to identify lip patterns as early as the sixth week of intra uterine life[6]. From that moment on, lip groove patterns rarely change, resisting many afflictions, such as herpetic lesions. Lip Prints are considered to be the most important forms of transfer evidence and are analogues to finger prints[4]. The presence of lipstick stains on a suspect's clothing can be considered, as an indirect evidence of a

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1. Assistant Prof. Forensic Medicine Avicenna Medical College 2. Associate Prof. Forensic Medicine Avicenna Medical College, 3.Prof. Community Medicine in Avicenna Medical College,4,5,6 Lecturers Forensic Medicine Avicenna Medical College Lahore 7.MBBS Student 8.BBAStudent

Correspondence to Dr. Mudaser Hussain Abbasi, Assistant Professor

relationship between the suspect and the cosmetic using victim. Lip Prints can be used to verify the presence or absence of a person from the crime, provided there has been consumption of beverage, drinks, usage of cloth, tissue/ napkin etc, at the crime scene. Smears can also be found in other places such as cups, spoons or cigarette butts[8]. The middle 10 mm wide part of the lower lip is almost always visible in traces. The determination of the pattern depends on the numerical superiority of properties of the lines on the fragment[8]. Lip prints have to obtained within 24 hours of time of death to prevent erroneous data that would result from postmortem alteration of lip[13]. Lip patterns are classified in to five types of according to Suzuki and Tsuchihashi (1970)[7,10,11,12]. It is also known as Tsuchihashis classification. These types are most widely accepted classification in literature. Tsuchihashi studied the lip prints of 757 males and 607 females of Japanese origin. He classified the lip prints into six types according to the shape and course of the grooves. These were:

Type I: clear-cut grooves running vertically across the lip.

Type I: the grooves are straight but disappear halfway.

Type II: the grooves fork in their course.

Type III: the grooves intersect.

Type IV: the grooves are reticular

Type V: the grooves do not fall into any of the types I to IV.

Lip print pattern mainly depend on whether mouth is opened or closed. In closed mouth position lip prints shows the well defined ridges, where as in open mouth the ridges are relatively ill defined and difficult to interpret (14). The Study was carried out to study the variation of pattern among the students and their relation with the blood groups.

METHODOLOGY

Lip prints were collected from the subjects after obtaining their informed consent in the month of February-April 2012. The present study was conducted in the department of Forensic medicine and Toxicology to assess the common pattern of lip prints among the students. A total of 100 MBBS, 3rd year students of the Avicenna Medical College Lahore participated in the study. Lip prints were recorded on a white paper and each lip print was assigned by their serial numbers and roll no. of student. The Name and general information of the students like Age, Sex and Blood groups and Ethnicity were recorded on the proforma. Patterns of lip prints were classified according to Suzuki and Tsuchihashi classification. All the subjects were in the age range of 19-25 years consisting of 30 male and 70 female students. Ethical clearance was obtained from the institutional Ethical Committee.

Inclusion criteria

- Subjects willing to participate in the study and providing informed consent.
- Subjects free from any active or passive lesions on their lips.
- Those participated in the study were students of MBBS 3rd year in Avicenna Medical College Lahore

Exclusion Criteria

- Gross deformities of lips like cleft lip, ulcers, traumatic injuries on lips.
- Known allergy to the lip stick used.
- Those participated in the study were not the students of MBBS 3rd year in Avicenna Medical College Lahore.

Materials used: Red color lip stick, white bond paper, unglazed Magnifying lens ,. Tissue paper

Procedure: The upper surface of the lipstick was wiped clean on tissue paper prior to each use for hygienic purposes. The subject was asked to open the mouth and lipstick was applied in a single motion evenly on the upper lip, then on the lower lip. The subject was asked to rub the upper and lower lips together in a horizontal direction, to spread the lipstick evenly on all parts of the lips. Print was acquired on the plain White paper with open and closed lips.

RESULTS

This study was observational descriptive study which was conducted on the students of Avicenna Medical College from Feb 2012 to April 2012 to explore and describe the trends of Lip prints. A total of one hundred students of 3rd year MBBS class were enrolled in the study.

Pattern of Lip prints	No. of pattern	%age
Type- I or Long vertical grooves	60	60
Type-II or Short vertical grooves	08	08
Type-II or Branching grooves	20	20
Type-III or diamond grooves	05	05
Type-IV or Reticular grooves	05	05
Type-V or other type grooves	02	02

This study showed that the most common pattern of lip prints was long Vertical groove or Type-I, Sixty students (60%) of the students were having this type I pattern of lip prints. Second common pattern was the Type-II Branching grooves, twenty (20%) students belonged to this type of pattern. Following these two most common lip print pattern Type-II of short vertical grooves were only eight (8%). Second

least common pattern which were found to the type-III and type-IV each group was consisting of five students (5%). Very least pattern of lip print was found to be other type grooves or type-V, only two (2%) students were found to be belonging to this group.

DISCUSSION

Human identification has always has been of paramount importance to society[15]. Worthy of note as providing an additional tool for personal identification is the series of studies on the morphology of the lips and the pattern produced when they are impressed on to a variety of surfaces[10]. The present study is the first of its kind being conducted in Pakistan describing the lip print pattern among the students of MBBS 3rd year. The present study showed the lip print patterns are unique and no two samples are identically same. This study showed the most common pattern of lip prints was long Vertical groove or Type-I (60%) and the second common pattern was the Type-II Branching grooves, (20%) and Type-II of short vertical grooves were only (8%). The second least common pattern which was found to be the type-III and type-IV each group was consisting of five students (5%). Very least pattern of lip print was found to be of other type grooves or type-V, Only two students were of this type (2%). Research into lip print identification has been performed for the last 50 years, resulting in the importance of this technique being recognized and accepted in many countries[3]. Many studies have characterized lip prints in order to ascertain their unique features and characteristics[17], with lip print types, forensic applications of the technique[7] and method of acquiring lip impressions at the crime scene[17]. Identifiable lip prints can be obtained up to 30 days after being produced[13]. Lip stick smears are frequently encountered in forensic science laboratories as one important form of transfer evidence. The presence of Lipstick stains on a suspect's clothing can be considered indirect evidence of a relationship between the suspect and the cosmetic-using victim[16]. Until more scientific investigation regarding the reliability of lip prints has been done it is highly doubtful, that this technique will be admissible in the court of law for identification purposes. Cheiloscopy is still an inexact science and more studies need to be done to confirm its validity[16].

The lip print is produced by a substantially mobile portion of lip. This fact alone explains the reason why the same person can produce different lip prints, according to the pressure, direction and method used in taking the print. If Lip stick is used, the amount can also affect the print. Smudging of lip prints is one of the major limitations of using lip sticks as in the presents study. Manual register of the overlay is another problem, due to possibility of some subjectivity. Another factor to be considered is the existence of some pathological conditions (lymphangiomas, congenital lip fistula, lip scleroderma, Meckelson-Rosenthal syndrome, syphilis, lip cheilitis, among others), which can invalidate the cheiloscopic study. One must also consider the possibility of post mortem changes of lip prints from cadavers with various causes of death. It should also be pointed out that only in very limited circumstances, is there antemortem data referring to lip prints, which obviously impairs a comparative study where necro identification is concerned[16].

CONCLUSION

- Lip print pattern is unique for each of the examined individual. This finding is hoped to be useful in the identification process, both in civil and criminal cases.
- The most common pattern of lip prints was long Vertical groove or Type-I , and the second common pattern was the Type-II Branching grooves. Second least common pattern which were found to the type-III and type-IV and Very least pattern of lip print was found to be other type grooves or type-V.

RECOMMENDATIONS

1. Similar studies are suggested on a larger sample at a National level so as to increase the accuracy of prediction
2. It is suggested to establish a data base for all individuals in a certain locality so as to be a reference in the criminal investigations
3. Further studies concerning the standardization of the pressure applied to the lip during recording the prints is recommended to allow fast and accurate assessment of lip-print patterns.

REFERENCES

1. Vamsi Krishna Reddy. Lip prints: An overview in Forensic Dentistry. J. Adv Dental Research. Vol II :Issue I:January,2011.
2. Choras Michal, Human Lips Recognition, in M. Kurzyñski et al. (Eds): Computer Recognition Systems 2, Advances in Soft Computing, Springer, 2007 Volume 45,838-843.
3. Kasprzak J. Cheiloscopy. In Siegel JA, Saukko PJ, Knupfer GC, eds. Encyclopedia of forensic sciences. Vol I. London: Academic Press, 2000: 358-61.
4. Sivapathasundharam B, Ajay Prakash P, Sivakumar G. Lip prints (Cheiloscopy). Indian J Dent Res 2001; 12: 234-7.

5. Caldas IM,Magalhaes T,Afonso A.Establishing identity using cheiloscopy and palatoscopy.Forensic sci.Int: accepted 21 April 2006.
6. Vahanwalla SP, Parekh BK. Study on Lip Prints as an Aid to Forensic Methodology. J Forensic Med and Toxicol. 2000; 17(1): 12-18.
7. Suzuki K, Tsuchihashi Y. New attempt of Personal identification by means of lip prints. J Indian Den.Assoc 1970;(1) 08-10.
8. Segui MA, Feucht MM, Ponce Ac, Pascual FAV. Persistent Lip sticks and their lip prints: new hidden evidence at the crime scene. Forensic Sci. Int 2000;112(1):41-47
9. Santos M Queiloscopy: A supplementary stomotalogical means of identification, International Microform J.Legal Medicine.1967.p 2.
10. Tsuchihashi Y. Studies on personal identification by means of lip prints. Forensic Sci 1974; 3: 233- 48.
11. Suzuki K, Tsuchihashi Y. Personal identification by means of lip prints. J Forensic Med 1970; 17: 52-7
12. Suzuki K, Tsuchihashi Y. New attempt of personal identification by means of lip prints. Can Soc Forens Sci J 1971; 4:154-58.
13. Utsuno H, Kanoh T, Tadokoro O, Inoue K. Preliminary study of post mortem identification using lip prints. Forensic Sci Int 2005; 149: 129-132.
14. Shailesh M Gondvikar, Atul Indurkar,Shirish Degwekar, Rahul Bhowate. Cheiloscopy for sex determination. J Forensic Dent Sci 2009;1;2:56-60.
15. Rothwell BR. Principles of dental identification.Dent Clin North Am 2001;45:253-69
16. Amith HV, Anil V Ankola,Nagesh L, Lip prints –can it add in individual identification. Journal of oral health & community dentistry September 2011;5(3),113-118
17. Endris R, Poetsch-Schneider L.Value of human lip lines and nail striations in identification.ArchKriminol 1985;175(1-2):13-20.