Original Article

Investigation of anthropometric patterns in lip for individual men with autism in the Fars family based on analysis of photographic and cheiloscopy

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Abstract

Introduction: Autism spectrum disorder entails continuous failure in communication, social interaction, limited interests, and other behavioral symptoms. It is associated with multiple complications and problems and has a poor prognosis. Anthropometry is the science of measuring linear and angular dimensions of body limbs. Therefore, fingers anthropometry or lips print cheiloscopy can be used to identify individuals or to develop medical anthropology research.

Materials and Methods: In this study, 37 male children aged 3 to 18 years old with autism spectrum disorders whose diagnoses were approved by a psychiatrist and 43 healthy children from two Fars ethnic groups living in Mashhad were recruited. Anthropometric measures were measured for studying lips print. Pictures were transferred to a PC and Picture Manager Software was used to investigate each lip patterns. Then, each photo was divided into six districts (each lip into three zones). These areas include: upper right (UR), upper middle (UM), upper left (UL), lower right (LR), lower middle (LM), and lower left (LL). Data were analyzed through polynomial regression and ANOVA models by SPSS software.

Results: The most abundant lip patterns in the male population with Autism Spectrum Disorder in Fars ethnicity were complete branch pattern and reticular pattern

Conclusion: It seems that lips print cheiloscopy can be used to identify individuals with autism spectrum disorders through more researches.

Keywords: Anthropometry, Autism, Cheiloscopy

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Introduction

Autism Spectrum Disorders (autistic) are a clinical diagnosis of persistent deficits in communication, social interactions, restricted interests, repetitive behaviors, and other symptoms of the behavior of others. The prevalence of this disorder in the past decade due to changes in the definition of the disorder (autism) from an apparent disorder to the spectrum of disease has increased. These disorders are usually in early childhood. The cause is not completely understood, but the role of genetic, environmental, and biochemical abnormalities has risen (1,2).

Children may be evaluated based on their social performance to its lowest level for moot (Mutism) and social isolation and the highest level that can be seen in older children who can face social interactions but is different from the others that they are named active but odd (1-3). Autism Spectrum Disorders have a long journey and unfavorable prognosis. The lifelong disorders and complications are numerous problems in the family and society. Almost two-thirds of adults with a disability are severe, and all life completely dependent on family and individual institutions remains (1-3). In order to improve the quality of life of these, their severe and early treatment is more important prognostic (1-3). Several studies on Autism Spectrum Disorders have been done about drug and non-pharmacological treatments. No effective cure has not been identified, and drug therapy is used only to reduce the symptom (1-4). Anthropometry is composed of two Greek words: Anthropo and metric, meaning human and measurement, respectively. Anthropometry is a branch of biometry that contains only humans. The general concept of this science is obtaining and measurement of dimensions and body size (5,6). The study of development patterns and anthropometric characteristics lip at different ages gives us the criteria that can be used to repair various anomalies. Knowing the different anthropometric changes on the lips of all ages, not only in the treatment plan, time, and type of surgery, is helpful, but in anticipation of the next change in the surgical area can also be effective. In addition to oral and maxillofacial surgery (orthognathic), standards specify soft tissue such as the lips is required. On the other hand, research

and development of lip morphology patterns may be important in biological anthropology studies. Since, anthropometric parameters on the basis of age, gender, geographic location and characteristics of different breeds of humans, since, anthropometric parameters on the basis of age, gender, geographic location and characteristics of different breeds of humans, anthropometric studies have to be done separately for each population by age and gender. Sometimes such research in medical knowledge could be important anthropometric (6).

Cheiloscopy from the Greek word cheilos and eskopein, meaning lips and to see, has been taken and the name that is given to the study of lip prints. Cheiloscopy is important to the fact that lips print for each individual as a fingerprint is unique (7).

In the past decade, studies lips print the attention of scientists as a new tool for human identification in social issues and have attracted criminals. Lip print is including lines and normal gaps and grooves present on the lips. They in the sixth week of fetal life to arise and do not change over time. So it can be used as a tool in forensic medicine. These prints, after making some changes, such as trauma, inflammation, and diseases such as herpes, returned again to the first case. So the situation and form grooves do not change with environmental factors (8).

In 1960, Santos lip lines were divided into two groups: simple and compound (9).

Tsuchihashi and Suzuki, the years 1968-1971, other studies were done over a long time, which led to a new classification of lip prints. By Category, Tsuchihashi and Suzuki tracks are divided into six districts (10). Complete vertical (I) partial vertical (I), branch (II), crossover (III), reticular pattern (IV), and irregular (V).

By Category, Renaud's tracks are classified into ten types (Figure 1).

The types of tracks by category Renaud: complete vertical, B – incomplete vertical, C – complete bi-furcated, D – incomplete bi-furcated, E- complete branch, F- incomplete branched, G- reticular, H- X-form or comma, I- horizontal, J- Other forms (11). In 2014, the relationship between lip prints, fingerprints, and blood group ABO was studied, and no correlation between lip line patterns, fingerprints, and blood group was found (12). In 2013, a study was conducted on

100 patients with cancer in Nigeria, and no significant differences were obtained with healthy subjects (8). The aim of this study was to evaluate anthropometric patterns of lips of children with autism in the Fars tribes residing in Mashhad.
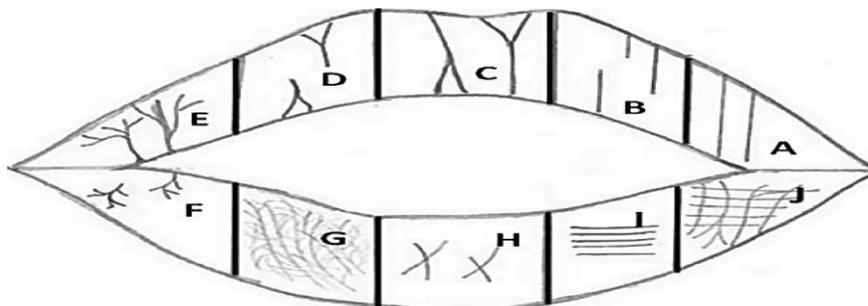

Figure 1. The types of tracks by category Renaud: complete vertical, B – incomplete vertical, C –complete bi-furcated, D – incomplete bi-furcated, E- complete branched, F- incomplete branched, G- reticular, H- X-form or comma, I- horizontal, J- Other forms

Methods and Materials

This study is a clinical trial field. Also, it has been done cross. In this study, male children referred to special schools and clinics of Ibn-e-Sina Hospital and Children's Welfare dependents maintenance of autism and special education and autism spectrum disorders or private centers of Mashhad were autistic, and the selection criteria the study showed, were included in this study and given the limited study Fars ethnic, ethnicity also asked patients. Due to the absence of a similar article on this double-blind crossover on understudying design and also considering the number of patients available, the sample size in this pilot study was two groups of healthy (control) and patients.

The first group of 37 children and boys between the ages 3-18 years with a diagnosis of Autism Spectrum Disorders, which were confirmed by two child and adolescent psychiatrists, were selected and given a limited study Fars ethnic, ethnicity, and patients were also questioned.

The second group, controlled through healthy subjects who were not diagnosed with the disorder as well not have a sister or brother with them confirmed, was selected randomly. The group included 43 children and adolescents in the age range of 3-18 years and was all ethnic gulfs. In this study, a digital camera (Canon Powershotsx 150-20.1 Mega Pixel) was used to capture all complete-face photos (happened lips). For studying lips prints, photos were transferred to a computer and using picture manager software, and lips patterns were investigated.

Then, each image was divided into six districts. The upper right (UR), upper middle (UM), upper left (UL), lower right (LR), lower middle (LM), and lower left (LL) (Figure 2). Each area was evaluated separately and the frequency of each pattern in each area between one type of lip pattern (complete horizontal, vertical partial, cross, branched, reticular, irregular), respectively obtained (11) (Figures 3-6).
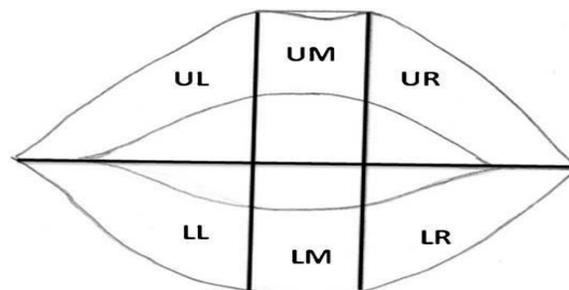

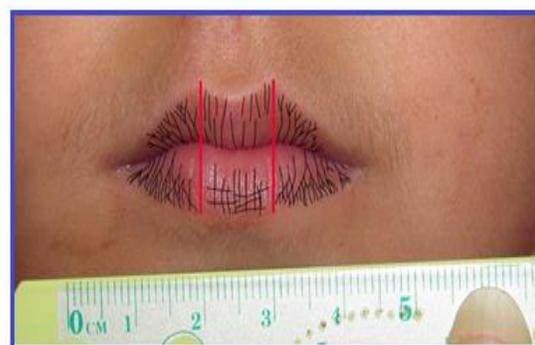**Figure 2.** Portrait of evaluation identified six areas related to human lips

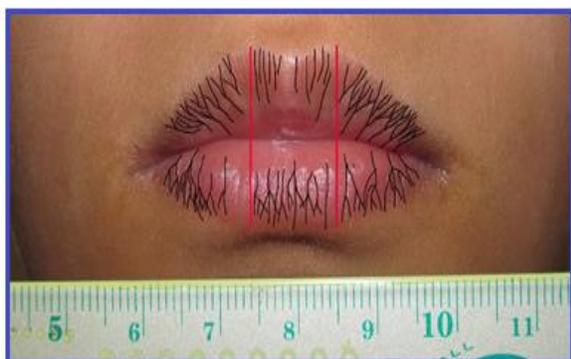**Figure 3.** Pictures patterns of lip lines for 5 years old male with both autism

Figure 4. Pictures patterns of lip lines for 14 years old male with both autism

Results

After transferring pictures to a computer and investigating by picture manager software, patterns of each lip were studied.

In the upper right (UR) complete branch pattern among patients is 69 percent, and among healthy people is 3.5%, which represents a huge difference.

In the upper-middle area (UM), reticular pattern in 70.2% of patients and among healthy individuals is 15.4 percent, which represents a huge difference.

In the upper left (UL) complete branch pattern in patients is 71.6%, and among healthy individuals is zero, which shows a large difference.

In the lower right (LR) complete branch pattern between patients and healthy subjects is 81.7% and 63.7% percent, which represents the difference is not very large.

In the lower middle area (LM) vertical pattern among patients is 6.4% percent, and among healthy individuals is 39 percent, which indicates a large difference.

In the lower left area (LL) complete branch pattern between patients and healthy subjects was 85.7% and 46.3%, which shows a large difference.
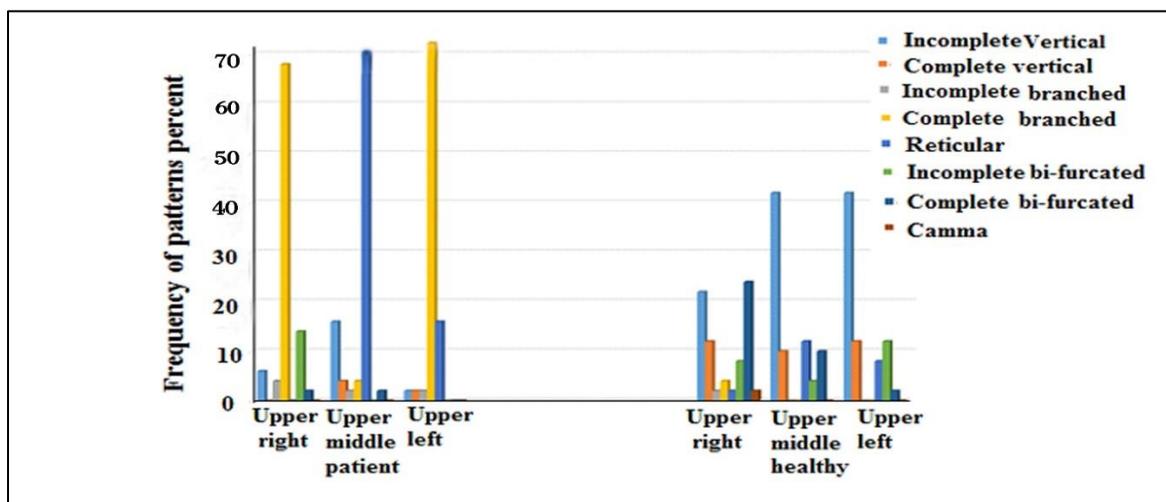

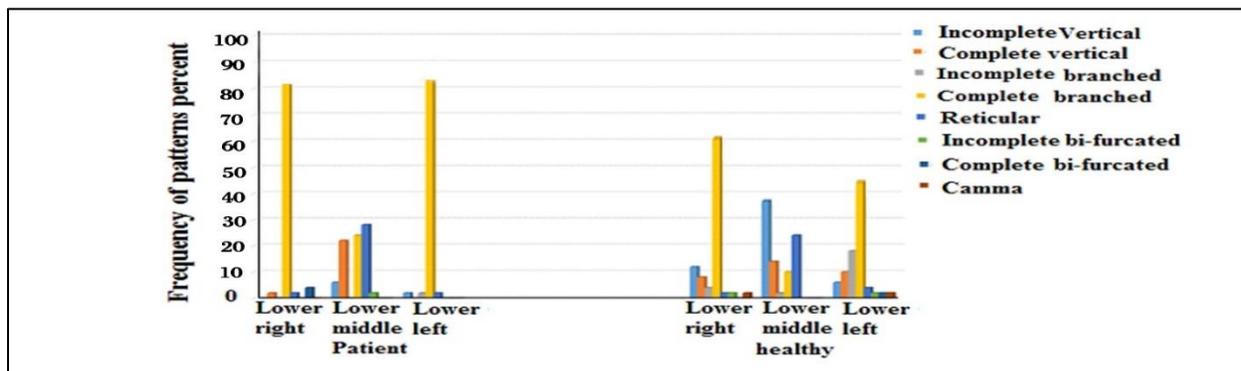**Chart 1.** Bar graph comparing abundance patterns upper lip lines between healthy and patient groups

Chart 2. Bar graph comparing abundance patterns lower lip lines between healthy and patient groups

Discussion

In the past decades, studies of lips print (Cheiloscopy) have the attention of scientists as a new tool for human identification in social issues and has attracted criminals. The patterns in the sixth week of fetal life create and do not change with the passing of time. So it can be used as a tool in forensic medicine. The prints, after making some changes, such as trauma, inflammation, and diseases like herpes, come back again to the first case. So, the situation and form grooves do not change with environmental factors (8).

It seems so far in Iran and anywhere in the world that the determination of a study in patients with autism does not have lip lines. In the Fars studied population suffering from autism residing in Mashhad, most patterns related to the type of complete-branch and reticular, and the lowest type was related to comma and horizontal patterns based on charts 1-2.

Dominate et al., in 2010, lip print patterns on women and men of Medina studied and confirmed that Lip lines are unique to each individual. This study included 540 females and 426 males aged 40-18 years and 13 twins and 19 families that were of different ages, indicating that: The lip lines for each individual are unique. Different lip pattern among various family members was diagnosed. In identical twins were recorded non-identical lips printing patterns were. In this study, patterns were investigated based on the Renaud category. The most common type of pattern in women J (horizontal) was reported. The results of the present study, in comparison with the above results that the most common pattern is related to the type of branch and reticular, were different (13). A study in 2013 was conducted by Uduak Umana et al. on 100 patients with cancer in Nigeria. The aim of this study was to investigate lip print in patients with cancer. Dermatoglif has proved to be an important tool for the diagnosis of diseases and genetic disorders. Since the lip print is unique, a fingerprint can be used as a genetic marker useful in some congenital diseases and clinical practices. In the cases of above cancer, a lip print in a high percentage (62.4%) of the branch was found that match the present study (8).

A study to identify people by Sharma et al. in 2012 in order to compare Cheiloscopy and Palatoscopy was conducted. This study was done on 100 dental students (50 males and 50 females). Type I (vertical), I "(Vertical incomplete), and irregular pattern (V) were the most common pattern among reticular women (IV) and men, respectively; the results of the present study was, to some extent, not inconsistent with the above results. There was no significant difference between both men and women in palate lines. This study shows that both print lips and palate lines are unique, but lip print is a more reliable method for determining gender (14).

Conclusion

To investigate lips dimensions in Fars people with autism compared between the two groups of patients and healthy, the most common pattern of lips lines in people with autism pattern, branch, and reticular patterns were reported. It is hoped that in future similar projects, to complete the lip anthropometric database of Fars nations in Iran, extensive statistical societies in each of the ethnic Turkic, Baluchi, Kurdish, and other types of diseases be prepared to be considered a diagnostic method.

Acknowledgment

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