

Clinical Epidemiological Study of Children with Cleft Lip and Palate

SHAWANA IQBAL¹, SHAHAB ADIL², SYED RIAZ GILLANI³, SYED SALMAN SHAH⁴, ASMA SAMI⁵

^{1,3-5}Residents, ²Professor,

Department Orthodontics, Peshawar Dental College, Warsak Road Peshawar

Correspondence to Dr. Shawana Iqbal, E-mail: drshawanaiqbal@gmail.com Cell: 0321-9397100

ABSTRACT

Aim: To determine the frequency of different types of cleft lip and palate and to investigate the possible relation of some risk factors to cleft lip and palate.

Study design: Descriptive study.

Place and duration of study: Peshawar Dental College, Peshawar Pakistan from 1st August 2017 to 31st January 2019.

Methodology: One hundred and seven patients with congenital cleft lip and cleft palate deformities, either gender and age ranged from 1 day to 720 days were enrolled. Cleft types were categorized as bilateral cleft lip and palate (BCLP), left cleft lip and palate (LCLP), right cleft lip and palate (RCLP), cleft alveolus (CLA) and bilateral incomplete cleft (BICLP).

Results: There were 73(68.2%) males and 34(31.8%) females. The highest number of patients from Peshawar 30(28%) followed by Swat 21(19.8%) and Charssada by 11(10.3%). Forty two (39.3%) patients' parents had consanguineous marriages. There were 89(83.2%) of mother haven't used folic acid during their pregnancy. Forty 40(37.4%) cases had a positive family history of cleft deformities. Most common systemic disease was anemia 25(23.2). Eighty five (79.4%) of cleft lip and palate patients were belonging to poor class family.

Conclusion: The households of cleft lip and palate children demonstrated low socioeconomic status. The incidence of cleft lip and palate should be reduced to enhance the conditions of women during pregnancy by maintaining a balanced diet and giving them folic acid.

Keywords: Epidemiology, Children, Cleft lip, Palate, Risk factors

INTRODUCTION

Cleft lip and palate is the most common hereditary malformation of the head and neck region, its appearance is presage by a unique set of physical and psychological concerns. The greatest wealth of any nation is its next generation of good, intelligent, educated, and innovative children. Congenital deformities is a big factor rendering such a massive commodity inefficient¹. As Alice miller say "All children are born to grow, to develop, to live, to love, and to articulate their needs and feelings for their self-protection." Cleft lip and palate (CLP), is frequent encountered defect which creates several serious problems for these children. These issues can be found in the affected individuals, including facial and dental deformities and physical disorders such as breathing, vision, voice and eating problems². The two important problems encountered by a cleft lip and palate baby born with it are feeding and articulation³.

Etiology of cleft lip and palate is of genetic and environmental factors either alone or in amalgamation.³ The environmental conditions of the fetus depend on the mother's status, which is intent on food which she take and genes that play a role in the transition of nutrients and there metabolism. The possibility of forming cleft lip and palate is greatest among infants born to mothers who have metabolic disorders such as diabetes mellitus.⁴ Non-genetic risk factors such as several medicines that have teratogenic effect, radiation; smoking and alcohol consumption during pregnancy have all been proposed as risk factors, which may contribute to its etiology. Folic acid has been reported to have a preventive effect.^{5,6}

Descriptive surveys on cleft lip and cleft palate have been done national and international.⁸⁻¹⁰ Among congenital malformations and skeletal deformities, the occurrence of cleft lip and palate ranks second in the world.⁷ Asians are at higher risk than from rest of the world. The incidence of oral cleft in every 1000 live births is reported 1.91 in Pakistan.¹⁰ Yet, there are a very huge number of Pakistani children with a cleft lip and cleft palate disorder who are expected to face other problems with their limitations in their future lives. However, there are major differences across and within geographical, ethnic and national borders that illustrate the importance of gathering distinct subsets of data from various regions of the world.

MATERIALS AND METHODS

This descriptive study included 107 clefts reported at cleft lip and palate centers in Peshawar Dental College, Peshawar Pakistan from 1st August 2017 to 31st January 2019 were enrolled. Patients with atypical OC, submucosal cleft, and velopharyngeal incompetence were not included. The study was approved from Peshawar Medical College's Ethics Committee. Cleft types were categorized as bilateral cleft lip and palate (BCLP), left cleft lip and palate (LCLP), right cleft lip and palate (RCLP), cleft alveolus (CLA) and bilateral incomplete cleft (BICLP). Each of these cleft types was divided into males and females. The data collected was analyzed using the SPSS-15.

RESULTS

There were 73(68.2%) males and 34(31.8%) females. In male patients, the left side was the most commonly affected side while bilateral cleft lip and palate was 59% of overall bilateral cases. The mean age was 47.47 days. The highest number of patients from Peshawar 30(28%) followed by Swat 21(19.8%) and Charssada by 11(10.3%). Forty two (39.3%) patients' parents had consanguineous marriages and 65(60.7%) patients had no consanguineous marriages. There were 89 (83.2%) of mother haven't used folic acid during their pregnancy. Forty 40(37.4%) cases had a positive family history of cleft deformities. Most common systemic disease during pregnancy which is associated with cleft lip and palate is anemia 25(23.2%) of overall cases. Eighty five (79.4%) of cleft lip and palate patients were belonging to poor class family (Table 1).

DISCUSSION

In the present study; the overall male to female ratio was almost 2:1. Similar observations were Incidence rate of different types of the cleft was higher in males reported by Pavri et al¹¹ from Canada. Unilateral left-sided clefts are more common than right-sided unilateral cleft lips^{12,13} which is supported by ours study.

In our study, based on the collected data, approximately 32.7% had a family history of cleft lip and Aziza et al¹⁴ observed more than a quarter of their study population associated with a positive family history. Ravichandran et al¹⁵ produced similar results with 1/3 of their study population having a positive family history and the family history being mainly positive for a cleft lip in association with cleft palate. In another series from Spain¹⁶,

Received on 05-05-2022

Accepted on 15-09-2022

21.94% of patients of cleft deformities were reported with a positive family history. In contrast to our observations, Sukwha et al¹⁷ in Tanzanian, they found family history in 15% of cases of cleft deformities. Similarly, a lower family history of 4.8% was noted in another African study from Ethiopia. In the current study, 42% of patients' parents had consanguineous marriages and the ratio of the consanguineous to non-consanguineous relationship was similar for all types of cleft deformities. These results were found to be consistent with other regional studies from Riyadh (Kingdom of Saudi Arabia), who observed a consanguineous relationship in 56.8% and 55% of cleft patients¹⁸. This high degree of correlation of consanguinity with cleft deformities underlines the value of awareness regarding the potential hereditary effects of consanguinity in our culture with strong consanguinity marriages. A positive family history for cleft lip and palate was seen in our study 32.7% of patient. This shows strong genetic association¹⁹.

Table 1: Demographic information of the patients (n=107)

Variable	No.	%
Gender		
Male	73	68.2
Female	34	31.8
Residence		
Peshawar	30	28.0
Swat	21	19.8
Charssada	11	10.3
Upper Dir	8	7.5
Nowshera	6	5.6
North Waziristan	6	5.6
Kohat	5	4.7
Hangu	4	3.7
Attock	3	2.8
Swabi	3	2.8
Mardan	3	2.8
Batkhela	2	1.9
Laki Marwat	2	1.9
Chitral	2	1.9
Afghanistan	1	0.9
Kindred Marriage		
No inter cousin marriage	65	60.7
Inter cousin marriage	42	39.3
Folic acid using		
No folic acid during pregnancy	89	83.2
Folic acid used during pregnancy	18	16.8
Family history of CLP		
Negative	67	62.6
Positive	40	37.4
Systemic disease during pregnancy		
No drug history	66	61.7
Anemia	25	23.2
Infection	5	4.7
Hypertension	5	4.7
Typhoid	3	2.8
Fits	1	0.9
Diabetes	1	0.9
Allergies	1	0.9
Socioeconomic status		
Poor	85	79.4
Middle class	18	16.8
Upper class	4	3.7

The ingestion of medications during the first trimester of pregnancy is another consideration to be weighed. Prenatal history of anemia was found to be present in average cases with 23% when gestational complications were observed in mothers with children with clefts. It can be observed that folic acid supplementation is another factor can be affected in the first trimester of pregnancy because 81.3% of mother hasn't use folic acid during their pregnancy. The obtained results were in favor of the hypothesis of the role of folic acid in the prevention of cleft lip and palate. No preconception usage of folic acid and poor consumption of folate in foods more than 10-fold increased OFC incidence in offspring²⁰. Evidence is increasing that nutrition plays a significant role in the development and prevention of birth defects, including OFC²¹. Families are typically deprived of nutritious food, preconception of folic acid and multivitamin supplements when surviving below deprivation during the

pregnancy.²² In future the creation of interventions for prevention of cleft lip and palate can be supported by increasing our understanding of the role of the diet, the genes and their interactions in CLP pathogenesis.

CONCLUSION

The households of cleft lip and palate children demonstrated low socioeconomic status. Mass-scale protection requires support for maternal wellbeing and dietary interventions with particular regard to folic acid during preconception time. The incidence of cleft lip and palate should be reduced to enhance the conditions of women during pregnancy by maintaining a balanced diet and giving them folic acid.

Conflict of interest: Nil

REFERENCES

- Noorbakhsh N, Davari HA, Akochakian SH, Davari M. Comparative evaluation of risk factors in children with cleft lip and palate and healthy children. *J Isfahan Dent School* 2011;6(5):526-32.
- Peterson LJ, Ellis E, Hupp JR, Tucker MR. *Principles of exodontias: In: Contemporary oral and maxillofacial surgery.* 4th ed. St. Louis: Elsevier, 2003; 184-220.
- Azimi C, Karimian H. Cleft lip and cleft palate relationship with familial marriage: a study in 136 cases, 67(11) ed. *Tehran Univ Med J* 2010;67(11):806-10.
- Krapels IP, Vermeij-Keers C, Müller M, de Klein A, Steegers-Theunissen RP. Nutrition and genes in the development of orofacial clefting. *Nutr Rev* 2006; 64(6): 280-88.
- Honein MA, Paulozzi LG, Watkins ML. Maternal smoking and birth defects validity of birth certificate data for effect estimation. *Public Health Rept* 2001;116(4):327-35.
- Carinci F, Rullo R, Farina A, Morano D, Festa V, Mazzarella N, et al. Non-syndromic orofacial clefts in southern Italy: pattern analysis according to gender, history of maternal smoking, folic acid intake and familial diabetes. *J Craniomaxillofac J* 2005;33(2):91-4.
- Bellis TH, Wohlgam B. The incident of cleft lip and palate deformities in United State. *J Orthod* 2000;26:121-5.
- Elahi MM, Jackson IT, Elahi O, Khan AH, Mubarak F, Tariq GB, et al. Epidemiology of cleft lip and cleft palate in Pakistan. *J Plast Reconstr Surg* 2001;113:1548-55.
- Pavri, S., & Forrest, C. R. (2013). Demographics of Orofacial Clefts in Canada from 2002 to 2008. *Cleft Palate-Craniofacial J* 2013;50(2):224-30.
- Iregbulem LM. The incidence of cleft lip and palate in Nigeria. *Cleft Palate J* 1982;19:201-5.
- Fogh-Andersen P. Epidemiology and etiology of clefts. *Birth Defects Orig Artic Ser* 1971;7:50-3.
- Aziza A, Kandasamy R, Shazia S. Pattern of craniofacial anomalies seen in a tertiary care hospital in Saudi Arabia. *Ann Saudi Med* 2011;31:488-93.
- Ravichandran K, Shoukri M, Aljohar A, Shazia NS, Al-Twajiri Y, Al Jarba I. Consanguinity and occurrence of cleft lip/palate: a hospital-based registry study in Riyadh. *Am J Med Genet* 2012;2:541-6.
- Yáñez-Vico RM, Iglesias-Linares A, Gomez-Mendo I, Torres-Lagares D, Gonzalez-Moles MA, Gutierrez-perez JL, et al. A descriptive epidemiologic study of cleft lip and palate in Spain. *Oral Surg Oral Med Oral Pathol Oral Radiol Endodontol* 2012;114(5 Suppl): S1-4.
- Sukwha K, Woo Jung K, Changhyun O, Jae-Chan K. Cleft lip and palate incidence among the live births in the Republic of Korea. *J Korean Med Sci* 2002;17(1):49-52.
- Van Rooij IALM, Vermeij-Keers C, Kluitmans AJL, et al. Does the interaction between maternal folate and the methylenetetrahydrofolate reductase polymorphisms affect the risk of cleft lip with or without cleft palate. *Am J Epidemiol* 2003;157:583-91.
- Steegers-Theunissen RPM, Steegers EAP. Nutrientgene interactions in early pregnancy: a vascular hypothesis. *Eur J Obstet Gynecol Reprod Biol* 2003;106:115-7.
- Puho E, Metneki J, Czeizel AE. Maternal employment status and isolated orofacial clefts in Hungary. *Cent Eur J Public Health* 2005;13:144-8.
- Reddy SG, Reddy RR, Bronkhorst EM, Prasad R, Ettema AM, Sailer HF, et al. Incidence of cleft lip and palate in the state of Andhra Pradesh, South India. *Indian J Plast Surg* 2010;43:184-9.
- Andrew EC, Laszlo T, Rea S. Dose dependent effect of Folic acid on the prevention of orofacial clefts. *Paediatric* 1999;104:e66.