

Epidemiology of Cleft Lip and Palate in Pediatric Patients – A Hospital Based Study

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Abstract: Prevalence of this congenital CL/P deformity is reported as 0.5-2 per 1000 live births depending on the country's population. Cleft lip and palate is more frequent in Asian countries (2.1 in 1000), as compared to African and American countries. This work was carried out at, over a period of 5 years. The study was approved by the Research and Ethics Committee of the hospital. A total number of 1800 patients including primary and secondary cleft lip and palate were investigated. The details of the subjects in terms of history, clinical features and haematological investigations were recorded on an investigator-designed proforma, after obtaining an informed consent from the patient. From a total of 2800 cases, 40 children with CL ± P were examined between the study periods. According to this incidence, the confidence interval by the probability 95% was 1.9-2.34 per 1000 live births. The age of patients ranged from 1 day to 15 years. Majority of the cases were females. It has been found that CLP were more common representing followed by CL, CP and rare cleft in both sexes.

Keywords: Cleft Lip, Cleft Palate, Prevalence

1. Introduction

Cleft lip and palate (CL/P) is one of the most common congenital deformities of craniofacial malformation leads to various dental anomalies in early childhood.¹ There is possibility that child may suffers from either cleft lip or cleft palate or both simultaneously at same time during birth. A cleft lip is an opening or split in the upper lip whereas cleft palate is an opening or split the roof of the mouth i.e palate or maxillary bone.²

Child with this anomaly not only suffers for poor dental development but also deprived from breast feeding due to improper oral seal, swallowing and nasal regurgitation, other associated problems are hearing difficulties due to abnormalities in the palatal musculature, and speech difficulties due to nasal escape and articulation problems.³

Prevalence of this congenital CL/P deformity is reported as 0.5-2 per 1000 live births depending on the country's population. Cleft lip and palate is more frequent in Asian countries (2.1 in 1000), as compared to African and American countries.³

Cleft lip and/or palate (CL ± P) is the most common congenital malformation of the head and neck;⁴ it accounts for 65% of all head and neck anomalies. Blacks have the lowest incidence rate of clefts. The highest incidence rate was found in Native Americans as 3.74 per 1000, followed by Japanese subjects as 3.36 per 1000 live births.^{5, 6} Cleft lip occurs more common in male than female whereas cleft palate occurs more commonly in female than in male reason for this is that fusion of the palatine shelves 1 week later in girls than in boys is thought thus it could be one of factor contributing in higher frequency of cleft palate in girls.^{3, 7}

Indian being the second most populous country of world with population of 1.21 billion, it is estimated that 24.5 million births per year and the birth prevalence of clefts is somewhere between 27,000 and 33,000 clefts per year. In India prevalence of cleft lip is estimated as 9.1 per 10,000

depending upon various epidemiological factors such as ethnicity, geography location and socio-demographic parameter³

The cause of CL ± P is known to be multifactorial in nature and includes both environmental and genetic factors. Medications, intake of anticonvulsants, radiation, smoking, and alcohol consumption during pregnancy have all been proposed as factors, which may contribute to its etiology. In contrast, folic acid has been reported to have a protective effect.⁶

India is the second most populated country in the world with a population of 1.02 billion. For its administration it is divided into 28 states and 7 union territories.⁸ Each state is governed by an elected local government, while the union territories are governed by the Government of India directly through its representatives. Andhra Pradesh state is in the south east of India.

The aim of the present study was to establish the incidence and some possible risk factors for CL ± P in Iran, which were not given due attention, from jan 2005 to december 2008.

2. Material & Method

This work was carried out at, over a period of 5 years. The study was approved by the Research and Ethics Committee of the hospital. A total number of 1800 patients including primary and secondary cleft lip and palate were investigated. The details of the subjects in terms of history, clinical features and haematological investigations were recorded on an investigator-designed proforma, after obtaining an informed consent from the patient. The authors investigated the differences between age and sex with cleft status and family history of clefts, birth order, religion, socioeconomic status, parent literacy, source of information for treatment. International classification of the cleft lip and palate was used for description purposes.

Firstly, all patients with a CL ± P were recognized and various types of CL ± P were categorized. Those infants who were born with a cleft on their lips were called as CL patients. Those infants who were born with a cleft only on their palate were called as CP patients and those who were born with a cleft on their lips extending to their palates were called as CL + P patients. After recognizing the children with cleft, previous and following born children were recognized as noncleft sample. The hospital, in which this study was carried out, had several particular characteristics.

Subjective analysis of patients, above 5 years of age and family, in terms of their satisfaction after surgery was also recorded on an investigator designed form, at the time of their discharge from the hospital. The data collected were then tabulated and analyzed.

3. Results

From a total of 2800 cases, 40 children with CL ± P were examined between the study periods. According to this incidence, the confidence interval by the probability 95% was 1.9-2.34 per 1000 live births. Distribution of CL ± P is shown in Table 1 according to type of cleft. It shows that both cleft lip and palate are more prevalent, which was 52% and the least was for only cleft lip patients (12%). 52% of all cleft patients were girls and 48% were boys [Table 2].

Table 1: Distribution of cleft type

Type of cleft	Total	Percent
CL	8	20
CL ± P	20	50
CP	12	30
Total	40	100

CL= Cleft Lip, CL ± P =Cleft Lip & Palate, CP= Cleft Palate

Table 2: Distribution of cleft according to gender

Type of cleft	Girls	Boys	Total
CL	5	3	8
CL ± P	10	10	20
CP	7	5	12
Total	22	18	40

CL= Cleft Lip, CL ± P =Cleft Lip & Palate, CP= Cleft Palate

4. Discussion

This study showed that the incidence of CL ± P infants was 2.14 per 1000 live births. Fifty percent of patients suffered from cleft lip and palate, 30% suffered from palatal cleft and 20% suffered from cleft lip. In various studies by different authors it is shown that the number of CL ± P patients in India is higher than other countries. There are numerous studies linking chemical agents with pathogenesis of CL ± P. It was suggested that alcohol has teratogenic effect during pregnancy. It was also reported that high dose of vitamin A has teratogenic effect during pregnancy.

In Asia, incidence of 1.94:1000 was found in the Philippines. The incidence of CL ± P was 1.81 per 1000 live births in Korea.⁶ In Pakistan, the incidence for CL ± P was 1.91 per 1000 live births. It is supposed that among Native

Americans, there is a greater incidence of palatal clefts, with figures of up to 1:300 live births.⁹ In the African American population, it is approximately one per 2500 births. This latter figure suggests that the incidence of CL ± P among African Americans is even lower than African natives.¹⁰

In our study the majority of women did not take any folate supplementation. Andrew et al. emphasized that the periconceptional daily supplementation of multivitamins including physiologic doses (<1mg) of folic acid or folic acid alone cannot reduce the birth prevalence of cleft lip and cleft palate. Only the high pharmacological doses (6mg) of folic acid alone in the critical period of the primary and secondary palate development are effective for the reduction of orofacial clefts.

In a study conducted in Mandya district of Karnataka, age of the patients ranged from 1 month to 18 years which was more than our study. 55.7% cases were males and 44.30% were females with the sex ratio of 1.26:1.¹¹ This study revealed that clefts were more frequent among male population, which is opposite to our study where we found female predominance.

5. Conclusion

The age of patients ranged from 1 day to 15 years. Majority of the cases were females. It as been found that CLP were more common representing followed by CL, CP and rare cleft in both sexes. The significant association was observed between consanguineous marriage and cleft deformities. People should be advised to avoid consanguineous marriage. Government (Health sector) should develop strategies in health sector for awareness, identification and treatment of cleft deformities.

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