

THE RISK FACTORS THAT CONTRIBUTE TO THE ETIOLOGY OF NON-SYNDROMIC CLEFT LIP WITH OR WITHOUT CLEFT PALATE (CL/P) IN THE J&K POPULATION

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ABSTRACT

Cleft lip and palate (CLP) are most common defects of the orofacial complex. A cleft lip or palate happens when the structures that form the upper lip or palate fail to fuse together properly when a baby is developing in the womb. In most cases the exact cause is unknown, but it's thought to be a combination of genetic (internal) and environmental (external) factors. It can occur as a part of syndrome or more commonly as isolated non syndromic pattern. In this study, we tried to find the relationship of external risk factors such as parental age, consanguineous marriage, socioeconomic status, family history, drug history with the formation of CLP. In addition we also tried to find the relationship of mother's folic acid level with the development of CLP.

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INTRODUCTION

The most common anomaly affecting the maxillofacial region is the CLP. although it does not cause the mortality, but it results in considerable morbidity to the child. The child which is affected by the CLP is a financial burden on the parents as it requires the services of wide variety of specialists such as cleft surgeon, orthodontists, pedodontists, speech therapist etc⁽¹⁾. CLP has wide variations in various racial groups, it occurs more frequently in Asians and Caucasians and less frequently in Negros⁽²⁾. Among the sexes, CLP affects males 1.5 – 2 times more than the females⁽³⁾. in case of isolated CP, females are affected considerably higher than the males^(3,4). The unilateral CLP occurs more frequently on left side as compared to the right side^(4,5). The left side is affected twice as compared to the right side⁽⁴⁾. The etiology of the CLP is multifactorial, both the genetic as well as environmental factors play the role in the etiology of the development of CLP⁽⁶⁾. It is thought that environmental factors trigger the genes in the susceptible individual which results in the formation of CLP or isolated CL or CP. In this study we will concentrate on the potential environmental risk factors (predisposing factors) which play the role in the development of CLP. The potential risk factors such as maternal age, consanguineous marriage, positive drug history, family history, socioeconomic status as well as folic acid level of the mother will be evaluated.

MATERIALS AND METHODS

For the purpose of present study, 100 patients both CLP and isolated CL and CP were recruited from the department of oral and maxillofacial surgery and dentistry, SKIMS Medical College Bemina & Dept of Cleft

Lip & Palate & Craniofacial surgery New City Hospital Tengpora Srinagar. These patients belonged to the age group of less than one year and were non syndromic in nature based upon various neurological and laboratory test. In 100 cases, 61 were boys and 39 were girls. Among the clefts, 49 % were CLP, 38% were CP and 13% were CL. The following factors were evaluated for their association with the CLP.

- Maternal age
- Consanguineous marriage
- Drug history
- Family history
- Socioeconomic status
- Folic acid level

RESULTS

Out of 100 cases that we recruited for the study, the age of mother was less than 20 years at first conception in 23% of cases, while it was between 20-30 years in 38% of cases and in 39% of cases it was above 30 years of age. Conception of cleft child occurred in 10% of cases at less than 20 years of age, 35% of cases in between 20-30 years of age and above 30 years it occurred in 55% of cases (table 1)

Table 2 shows that 23% of cases had consanguineous marriage indicating not as a risk factor in the present study. Out of 100 cases, 63% of cases were poor to average in socioeconomic status indicating as one of the strongest relationships to the development of CLP in the present study. 10% of cases had a positive drug history while as 13% had positive family history in the present study. Out of 100 cases, 43% of cleft child were the first born while as rest were second or later ones. Out of 100

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cases, an overwhelming 52% cases had folic acid level of mothers lower than the reference range .

DISCUSSION

In the present study the patients were recruited from the department of OMFS and dentistry,SKIMS Medical College, Bemina over a period of two years.The risk factors that affect the incidence of CLP were maternal age, consanguineous marriage, positive drug history, positive family history, socioeconomic status, folic acid level.

In the present study,10% of mothers were below 20 years of age while as 55% of mothers were above 30 years indicating extreme variants of age affect the incidence of CLP.The results in our study are in accordance with the study conducted by Saxen⁽⁷⁾, Ching and Chung⁽⁸⁾. Baird etal.⁽⁹⁾ who also concluded that maternal age has an effect on occurrence of CLP.In our study, a total of 65% mothers were either below 20 years or were above 30 years of age. The possible mechanism that results in CLP child could be concomitant increase of anaemia, haemoglobinopathy, diabetes mellitus, pregnancy associated hypertension etc that predisposes the mother to deliver a CLP child. In the present study, 23% of cases had consanguineous marriage indicating a possible moderate risk factor for CLP. This is in accordance with the studies of Habib 1978⁽¹⁰⁾, Welch and Hunter 1980⁽¹¹⁾, Calzolari et al 1988⁽¹²⁾.several studies have found out that consanguinity to be a major risk factor.the difference in the conclusion may be due to the variation in sample size, study design and method of analysis.In the present study, 63% of cases belong to the poor to average socioeconomic status indicating the major risk factor for the development of CLP. There is an established fact that the those people with higher socioeconomic positions have better health as compared to the people with the lower socioeconomic strata⁽¹³⁾.The exact mechanism governing the association is not fully understood and needs further investigation into the same.

In the present study, 10% of cases had a positive drug history during the pregnancy indicating not a major risk factor in the present study. The most common drugs prescribed were analgesics, antibiotics, antiemetics, vitamins etc^(14,15).The present study revealed that 13% of cases had the positive family history.The low incidence of positive family history is due to the fact that when a autosomal recessive gene is known to be the cause of deformity, most cases may have negative history⁽¹⁶⁾.In our study, 43% of cases were first born whereas 57% of cases were second or later ones. The study on birth order and its association was conducted by Cziezel and Tusnadi⁽¹⁷⁾ who found out that first born child had a fewer cleft problem as compared to second or later ones. These findings are similar in our study too. In the present study, 52% of cases had lower folic acid level than the reference range.The possible mechanism which leads to the CLP is that folate is a one carbon donor and is involved in the biosynthesis of purines and pyrimidines and in homocysteine remethylation, which produces methyl groups for methylation of DNA,proteins and lipids.

CONCLUSION

From the present study,it was concluded that maternal age,socioeconomic status and the lower folic acid level significantly increased the risk of developing the CLP, whereas the consanguinity had the moderate effect . the

other factors did not had much effect in developing the CLP.

Table 1 (Maternal age)

Age of mother (in years)	First conception	conception of cleft child
<20	23%	10%
20-30	38%	35%
>30	39%	55%

Table 2

Risk Factors	Percentage
consanguineous marriage	23%
socioeconomic status (poor to average)	63%
positive drug history	10%
positive family history	13%
first born child	43%
second or later one	57%
lower folic acid level	52%

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