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Maternal Exposure to Active, Passive Smoking and Tobacco Chewing and the Risk of Oral Cleft in New Born

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ABSTRACT

Objective: The main aim of present research was to find out a relation among environmental factors (smoking) and formation of Cleft Lip and Palate (CLP) by comparing the cases of CLP with controls. **Methodology:** It was a case control study, 100 cases of Cleft Lip and Palate infants up to six months of age from 1st January 2014 to 31 December 2014, in various Hospitals of Lahore, dealing with CLP. Antenatal history was taken in first trimester from mothers about, Active and passive smoking (cigarettes and hookah) and chewing of Tobacco. **Results:** The frequency of CLP was found to be significantly higher in mothers who were active smokers (6% as compared to 2% of controls) or passive smokers (26% as compared to 11% controls). Tobacco chewing also had an effect on the frequency of CLP (4% as compared to 0.4% controls). **Conclusion:** Active and passive smoking during the first trimester of pregnancy resulted in increased frequency of CLP.

Keywords: Cleft lip, Cleft palate, Environmental factors (smoking active, passive and tobacco chewing)

INTRODUCTION

Cleft lip is a gap or split in upper lip and cleft palate is gap or split in roof of mouth.[1-3] Cleft lip and palate are common birth defect after club foot. Kids with cleft lip and palate possess medical, psychological, social and financial implications on the affected individuals and families. Clefts are due to genetic and environmental factors. Risk factors such as maternal active and passive smoking, folic acid deficiency, maternal age during pregnancy have been linked to the development of clefts. In addition to disfigurement, a baby with cleft lip and palate suffers feeding difficulty, speech and language problems, hearing loss or recurrent ear infection. Later on teeth and jaw problem develop, with some missing teeth or extra teeth.[4]

MATERIALS AND METHODS

Study Settings

Infants with Cleft Lip or Cleft palate alone or both visited in different teaching hospitals of Lahore with facility of treating CLP under six months of age from 1st January 2014 to 31 December 2014. Diagnosis of CLP was confirmed by treating doctor. Case and controls with Genetic history and cousin marriage were excluded, cases and controls with consent from their mothers or relatives were included. It was case control study with convenient sampling. This study has been approved by King Edward Medical University, Advanced Board of Study in December 2013.

Interview

Mothers of study subjects were interviewed according to designed Questioners and set proforma, with demographic, medical, obstetric history, habits and occupation and use of smoking actively, chewing Tobacco and passively affected by smoking by House holds cigarettes or hookah in 1st trimester of pregnancy. After taking history of mothers, cases were examined, diagnosis was confirmed by treating doctors and photographs were taken.

Data analysis

Odds Ratio was estimated and 95% confidence intervals and SPSS, 20.00. Duration of exposure was described by Mean +SD.

RESULTS

The pathogenesis of non-syndromic cleft lip and palate is complex and both genetic and environmental factors are believed to be involved. Identification of environmental factors are crucial in order to formulate prevention strategies. Maternal exposure to active and passive smoking have been associated with cleft lip and palate.

Fig. 1: Bilateral Cleft Lip not United with Nasal Septum, Anterior and Posterior Cleft Palate

There were 6% mothers of cases and 2% mother of control gave history of smoking cigarettes during their pregnancy. Odds ratio was significant showing 3.13 times more risk if the mother smoked during pregnancy.

Fig. 2: Bilateral Cleft Lip

Fig. 3: Posterior Cleft Palate with Cleft Uvula.

Table 1: Association of "smoking during pregnancy"

	Cases	Control
Yes	6%	10(2%)
No	94%	490(98%)
Total	100	500

Odds Ratio = 3.13

Table 2: Association of "habit of smoking among house hold members"

	Cases	Control
Yes	26%	55(11%)
No	74%	445(89%)
Total	100	500

Chi-Square Test= 16.06
p-value= 0.000
Odds Ratio= 2.842

Smoking amongst family members was present in 26% cases and 11% of controls. Odds

ratio was significant showing 2.842 times more risk if house hold members had habit of smoking.

There were 4% mothers of cases and 0.4% mothers of controls who had used tobacco during pregnancy. Odds ratio was significant showing 10.38 times more risk if the mother used tobacco during pregnancy (Table 3).

Table 3: Association of tobacco use during pregnancy.

	Cases	Control
Yes	4	2
No	96	498
Total	100	500

***Chi-Square Test*=** 10.91
***p-value*=** 0.000
***Odds Ratio*=** 10.38

DISCUSSION

Different countries studies have different findings relevant to this study. A number of environmental factors have been concerned in the formation of cleft lip and or palate.

Active and passive smoking has been considered as a possible etiological factor increasing the incidence by 1.6-2.8 times. In little J, study risk of smoking and CLP is 1.34 times.[5] Odds ratio was significant in our study showing 3.13 times more risk if the mother used to smoke during pregnancy, and 2.842 times more risk if house hold members had habit of smoking. Odds ratio was also significant (10.38) if the mother used tobacco during pregnancy (Tables 1, 2, 3, Figs. 1-3). Similar findings have been reported by Miliras, P. *i.e.* a higher threat with maternal exposure to tobacco.[6]

CONCLUSION

In conclusion, this study demonstrated the role of some environmental factors in this geographical area for orofacial cleft forming. In the light of these results it is advisable to develop health care strategies and awareness programs for population at large and specifically for pregnant mothers.

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