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ORIGINAL ARTICLE

Maternal and paternal age, birth order and interpregnancy interval evaluation for cleft lip-palate

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Summary

Cleft lip and palate (CL/P) are the most common congenital craniofacial anomalies. **Aim:** To evaluate environmental risk factors for non-syndromic CL/P in a reference care center in Minas Gerais. **Materials and Methods:** we carried out a case-controlled study, assessing 100 children with clefts and 100 children without clinical alterations. The analysis dimensions (age, skin color, gender, fissure classification, maternal and paternal age, birth order and interpregnancy interval), obtained from a questionnaire; and later we build a data base and the analyses were carried out by the SPSS 17.0 software. The results were analyzed with the relative risk for each variable, in order to estimate the odds ratio with a 95% confidence interval, followed by a bivariate and multivariate analysis. **Results:** among 200 children, 54% were males and 46% were females. As far as skin color is concerned most were brown, white and black, respectively. Cleft palates were the most common fissures found (54%), followed by lip cleft (30%) and palate cleft (16%). **Conclusion:** although with a limited sample, we noticed an association between maternal age and an increased risk for cleft lip and palate; however, paternal age, pregnancy order and interpregnancy interval were not significant.

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INTRODUCTION

Neural tube defects and orofacial fissures are among the most common congenital alterations[1]. Non-syndromic cleft lip and palate (CLP) are the most common anomalies in the skull-facial area (OMIM 119530). In many regions of the world, CLP is more common than the Down syndrome[1]. Every two minutes, a child with CLP is born in the world, 660 children daily and 235 thousand new cases of fissures are seen annually. With the growth of the world population, we expect 3,200 new cases per year of CLP[2].

The incidence of CLP varies according to geographic location, race and socio-economic condition[3]. Fogh-Andersen[4] reported an incidence of 1.5 cases of CLP for every 1,000 births in Denmark, while in other regions the occurrence varied (1-2.69:1,000)[1,5]. Recently, Martelli-Júnior et al.[6] reported an incidence of 1.46 fissures for every 1,000 births, in the state of Minas Gerais, Brazil. Studies show that the Asian population, ancestors of Native Americans and Northern Europeans have a higher incidence of CLP[7]. In contrast, Africans and descendants have a greater incidence of lip fissure[8].

As far as embryology is concerned, CLPs result from primary defects on the craniofacial fusion which form the primary and secondary palates, in the first trimester of the intrauterine development[9]. These clinical fissures may be classified, having the incisive foramen as anatomical basis, in four groups: pre-incisive foramen or cleft lip (CL), post-incisive foramen fissures or cleft palate (CP), trans-incisive foramen fissures or cleft lip and palate (CLP) and rare facial fissures[10].

Together, the CLP make up a heterogeneous group of alterations, having a multifactorial origin, other genetic and environmental factors contribute to their etiology. It is greatly important to identify the etiological factors associated with a disease, because by knowing them it is possible to enhance our understanding of the disease and better develop prevention measures[11]. Among the environmental risk factors for CLP we stress: smoking, maternal and paternal age, alcohol, birth order, interpartum interval and folic acid deficiencies[8,11]. The goal of the present study was to evaluate, because of the lack of Brazilian studies, the association or not of environmental risk factors, especially maternal and paternal age, birth order and interpartum interval with CLP.

MATERIALS AND METHODS

We carried out a case-control study in order to assess the environmental risk factors associated with CLP, in a multiprofessional Reference Service for craniofacial deformities in the state of Minas Gerais, Brazil, between 2006-2008. The population in this study was made up of 200 children with and without non-syndromic CLP from similar socio-economic backgrounds. The group "case" had 100 parents from children (aged between 0 and 12 years), with non-syndromic CLP, diagnosed and being rehabilitated in the aforementioned institution, regardless of gender, skin color, place or country of birth. The "control" group had 100 parents of children in the same age range (between 0 and 12 years); however, without clinical alterations or craniofacial defects, seen at the odontopediatrics department of the same institution. Both groups had similar socio-economic backgrounds; and also the other inclusion criteria were similar. The aforementioned Reference Center treats exclusively patients from the public health care system (SUS), being certified by the Ministry of Health. From both groups we excluded the parents who did not accept to participate in the study, children with syndromic CLP and parents from consanguineous marriages.

In order to assess the risk factors, in both groups we used an individual instrument (guided questionnaire), encompassing the following analysis aspects: age, skin color, gender, cleft type, parents' ages, birth order and interpartum interval. The questionnaires were deployed always by the same examiners (DRBM and KWC) after being properly trained for the activity. The questionnaire was answered by both groups always after the clinical visit, with the mothers, thus avoiding any harm to the patients in terms of consultation and clinical visit. Each questionnaire was answered in one single visit. Previously, we held a pilot study to assess and check examiners' calibration and the very feasibility of the data collection instrument.

In the "case" group, the non-syndromic CLP cases were classified having the incisive foramen as anatomical reference10 in: (1) CL: including complete or incomplete, uni or bilateral pre-foramen clefts; (2) CLP: including unilateral and bilateral transforaminal clefts and pre and post-foramen clefts; (3) CP: include all the complete and incomplete post-foramen clefts and (4) Others: the rare facial clefts.

After deploying the questionnaires, the information collected was filed in a data bank and analyzed by the SPSS version 17.0 (Chicago, EUA) statistical software. The data was analyzed with relative risk for each variable in order to estimate the odds ratios (OR) with a 95% confidence interval, followed by a bivariate and multivariate analysis. This study was led according to the guidelines established by Ordinance 196/88 from the National Health Council - Ministry of Health, and it was submitted to and approved by the Ethics Committee of the University. Each participant in the study signed a Free and Informed Consent Form.

RESULTS

In the "case" group, of the 100 children with CLP, 64 (64%) were males and 36 (36%) were females, while in the "control" group, 56 (56%) were females and 44 (44%) males. As far as skin color is concerned, among the cases,