Birth Prevalence of Oral Clefting in Northern Iran

Mohammad Jafar Golalipour, Ph.D., Arezo Mirfazeli, M.D., Naser Behnampour, M.Sc.

Objective: **To explore the prevalence of oral clefting in northern Iran.**

Setting: **In the Dezyani hospital 37,951 live births from 1998 through 2003 were screened for oral clefts. Clinical and demographic factors of diagnosed cases, including birth date, ethnicity, type of oral cleft, parental consanguinity, and coexisting anomalies, were recorded for analysis.**

Results: **The overall prevalence of oral clefting was 0.97 per 1000 live births. The prevalence of cleft lip with or without cleft palate and isolated cleft palate was 0.60 and 0.37 per 1000, respectively. The prevalence of oral clefting was 1.08 per 1000 male births and 0.86 per 1000 female births. With respect to parental ethnicity, the prevalence of oral clefting was 0.86, 0.88, and 1.47 per 1000 in Fars, Turkman, and Sistani, respectively.**

Conclusions: **The prevalence of oral cleft among live births in the Dezyani hospital is similar to that reported in the previous studies for Iran and whites.**

KEY WORDS: *cleft lip, cleft palate, prevalence*

Cleft lip with or without cleft palate is the most common congenital orofacial anomaly in newborns (Derijcke et al., 1996; Tolarova and Cervenka, 1998). The reported prevalences vary from 0.19 to 2.69 per 1000 births in different parts of the world (Loffredo et al., 2001). The prevalence is highly affected by gender, type of cleft, and race/ethnicity (Vanderas, 1987). Oral cleft prevalence has been reported as 1.34 per 1000 in whites, 0.41 per 1000 in African Americans, 0.34 per 1000 in Africans, and 2.13 per 1000 in Japanese (Chung and Myrianthopoulos, 1968; Iregbulem, 1982).

Although there have been a few published epidemiological investigations about oral clefts in Iran (Farhud et al., 1986; Taher, 1992; Rajabian and Sherkat, 2000), there is no information about the prevalence of oral clefting in northern Iran. Therefore, the objective of this study was to estimate the overall prevalence of cleft lip and cleft palate in a referral hospital in Gorgan, which is the capital city of Golestan province in northern Iran.

Materials and Methods

This investigation identified all newborns with an oral cleft from among 37,951 live births between January 1, 1988 and December 31, 2003 in the Dezyani hospital. This hospital is the largest hospital with a labor facility in Gorgan, a capital city in the Golestan province in northern Iran. This hospital is a referral hospital with an annual rate of more than 6000 deliveries, accounting for the largest portion of deliveries (70%) in the city. Other deliveries (30%) are carried out in three private medical centers. Patients are usually from moderate to low socioeconomic class families with various ethnic backgrounds. Fars, Turkman, and Sistani are the three main ethnic groups in Gorgan.

All live births delivered in this hospital during the investigation were examined and screened for cleft lip and cleft palate immediately after delivery by a gynecologist. The diagnosis was later confirmed by a pediatrician. A questionnaire addressing relevant clinical and demographic factors was completed for each case by the pediatrician and completed by a nurse during an interview with the parents.

Questionnaire data included, birth date, gender, type of oral cleft (cleft lip and cleft palate), consanguinity of the parents, parental ethnicity, past history of oral clefts, consumption of any medication or drugs during the first trimester, and presence of other congenital anomalies. According to the clinical examination, newborns with an oral cleft were divided into two groups: cleft lip with or without cleft palate (CL±P), and isolated cleft palate (CP). In this study only overt cleft palate was considered. The questionnaires were collected and the data processed using SPSS software (SPSS Corp, Chicago, IL) for descriptive analysis. Prevalences were estimated for CL±P and CP separately.

Results

The overall prevalence of oral cleft live births during this 6-year period was 0.97 per 1000, or 1 in 1025 live births. The

Dr. Golalipour is Associate Professor, Department of Embryology, Gorgan Congenital Malformations Research Center, Gorgan University of Medical Sciences, Gorgan, Iran. Dr. Mirfazeli is Assistant Professor, Department of Pediatrics, Gorgan University of Medical Sciences, Gorgan, Iran. Dr. Behnampour is with the Department of Health, Gorgan University of Medical Sciences, Gorgan, Iran.

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Address correspondence to: Dr. Mohammad Jafar Golalipour, Gorgan Congenital Malformations Research Center, Gorgan University of Medical Sciences, P.O. Box 49175-553 Gorgan, Golestan, Iran. E-mail mjgolalipour@yahoo.com.

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TABLE 1 Prevalence (Per 1000) of Oral Cleft, CL ± P and Isolated CP According to Years, Gender, and Ethnicity in Live Births From 1998–2003*

		All Oral Clefts		*CL ± P*		*Isolated CP*	
Total	*Number of Births*	*Number*	*Prevalence*	*Number*	*Prevalence*	*Number*	*Prevalence*
Birth years							
1998–2000	19,514	20	1.02	13	0.67	7	0.35
2001–2003	18,407	17	0.92	10	0.54	7	0.38
Gender							
Male	19,370	21	1.08	13	0.67	8	0.41
Female	18,581	16	0.86	10	0.54	6	0.32
Ethnicity							
Fars	25,439	22	0.86	11	0.43	11	0.43
Turkman	5,686	5	0.88	3	0.53	2	0.35
Sistani	6,825	10	1.47	9	1.32	1	0.15

* CL ± P = cleft lip with or without cleft palate; CP = cleft palate.

prevalence of oral cleft was 1.02 per 1000 during the first 3 years (1998–2000) and 0.92 per 1000 during the last 3 years of the study (2001–2003). Oral clefts were found to be more common in male than female births (1.08 versus 0.86 per 1000). The prevalence of oral clefting was 0.86, 0.88, and 1.47 per 1000 live births in Fars, Turkman and Sistani, respectively (Table 1). The prevalence of CL±P was 0.60 per 1000 and CP was 0.37 per 1000 in live births.

Ten mothers (27%) reported taking some form of medication during the first trimester (e.g., diazepam, antibiotic, herbal medicine), but the majority could not remember the names.

Parents of 11 babies (29.7%) were related. Ten couples (27%) were first cousins and one was weakly related. Three of the affected newborns had a positive family history of oral cleft. One father, one mother, and one grandfather of the three affected babies had an oral cleft. Six newborns (16.2%) with oral cleft had other congenital anomalies; one with imperforated anus, one with hypospadiasis, two with hydrocephalus, and two with limb anomalies.

DISCUSSION

This study was conducted to explore the prevalence of oral clefting in Gorgan, northern Iran. There are only three studies that have reported the prevalence of oral clefts in the Iranian population (Farhud et al., 1986; Taher, 1992; Rajabian and Sherkat, 2000). Our results are similar to the findings of Rajabian in Shiraz, southern Iran, and Farhud in Tehran, but are in contrast with the finding of Taher in Tehran (see Table 2). It is possible that the high prevalence of oral clefts in the Taher study is due to the use of mustard gas during the Iran-Iraq war (Taher, 1992).

The overall prevalence of oral clefts is comparable with European and North American white populations that yielded consistent estimates of approximately 1 per 1000 births (Melnick et al., 1980; Vanderas, 1987; Croen et al., 1998; Christensen, 1999), but it is higher than the findings in Africans and African-American populations (Iregbulem, 1982; Khoury et al., 1983; Conway and Wagner, 1996; Croen et al., 1998) and lower than the Native American populations (Tretsven, 1963; Niswander and Adams, 1967; Niswander et al., 1975; Lowry and Trimble, 1977), Chinese and Philippine populations (Tan, 1988; Murray et al., 1997; Cooper et al., 2000) and Middle East Arab populations (Srivastava and Bang, 1990; Al Omari and Al-Omari, 2004). The reported prevalence in Japanese and Korean populations tends to be higher than in white populations (Ching and Chung, 1974; Lowry and Trimble, 1977; Chung et al., 1987; Natsume et al., 1988; Kim et al., 2002).

To have a better perspective about oral clefting in different parts of the world, several types of oral cleft and prevalence were previously reported by Mossey and Little (2002). The differences among these results in different parts of the world could be related to the study population, type of classification, and various selection criteria such as live births and still births in the study or eliminating aborted fetuses from the study.

We found that oral clefting was more common in male births. This finding is similar to that reported in Iran (Rajabian and Sherkat, 2000) and Korea (Kim et al., 2002). In addition, the rate of medication use during the first trimester observed in the current study was higher than that reported in previous studies from Iran (Taher, 1992; Rajabian and Sherkat, 2000). In contrast, parental consanguinity was lower than observed in a previous study (Rajabian and Sherkat, 2000). We also observed that the prevalence of cleft palate was higher in male than in female births. This finding is similar to other studies (Taher, 1992; McLeod et al., 2004), but it is contrary to the findings of Rajabian and Sherkat (2000) and Kim et al. (2002) in Iran and Korea, respectively. The overall percentage of affected newborns with concurrent anomalies was higher than the previous study in Iran (Rajabian and Sherkat 2000), but was the same as another study conducted in South America (McLeod et al., 2004).

In this investigation, the prevalence of oral clefting in Sistani was higher than in Fars and Turkman. Fars, Turkman, and Sistani are the three main ethnic groups in Gorgan. Fars is the

TABLE 2 Summary of Published Reports on the Prevalence of CL ± P and Isolated CP in Iran

Author	*Number of Births*	*Location*	*Time Span of Study*	*Prevalence per 1000 Births*	*CL ± P (%)*	*CP (%)*
Taher (1992)	21,138	Tehran	1983–1988	3.37	83.5	16.5
Farhud et al. (1986)	13,037	Tehran	1969–1977	1.61	81.0	19.0
Rajabian and Sherkat (2000)	19,369	Shiraz	1976–1985	1.03	60.0	40.0
Present study	37,951	Gorgan	1998–2003	0.97	59.5	40.5

* CL ± P = cleft lip with or without cleft palate; CP = cleft palate.

predominant inhabitant and has the most members. Turkman is the ethnic group that immigrated from central Asia 250 years ago, and the Sistani group emigrated from southeastern Iran (''Iran-Pakistan-Afghanistan'' border) half a century ago.

Previous researchers have pointed out the effect of race/ethnicity on oral cleft prevalence (Chapman, 1983; Amaratunga and Chandrasekera, 1989). This difference, especially within a given population, could be related to differences in environmental exposures, nutritional habits, or genetic susceptibility (Croen et al., 1998).

Conclusion

The present study shows, for the first time, the prevalence of oral cleft in Gorgan, a city in northern Iran. These findings will help establish a database for future studies, which will focus on etiology and ethnic disparity of oral cleft in the region.

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