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Incidence of Cleft Lip and Palate in Erbil City

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Abstract

Aims: This study was conducted to assess the epidemiology and some of the possible risk factors causing cleft lip and palate in Erbil city.

Materials and Methods: the data were obtained from the records of Raparin paediatric and maternity hospital in the center of Erbil city. The file records of live births during a period from January 2000 to January 2008 were reviewed for the occurrence of cleft lip and palate. The cleft cases were evaluated for site and type of cleft and sex of the infant. and some risk factors.

Results: 121 cleft lip and/or palate cases out of 60418 live births were registered. The overall incidence was 2:1000 live births. The percentage of cleft lip and palate, cleft palate only, cleft lip only was 55%, 30%, and 15% respectively. The ratios with respect of left or right or bilateral cleft was approximately 4.5:2:1.The infant sex and site of family residence showed no significant influence on the incidence of clefting. Maternal age of more than 30 years, maternal smoking, and positive family history of clefts, consanguineous marriage and low infant birth weight significantly increased the incidence of cleft lip and palate. About 7.4% of cleft cases were associated with other congenital anomalies, most frequently congenital heart disease.

Conclusion: The incidence of cleft lip and/or cleft palate is 2:1000 births. The incidence of cleft lip and palate is two times greater than cleft palate alone, and three times than cleft lip alone. Cleft lip was two times greater on the left side than on the right side. The incidence of clefts was greater in males than females.

Key words: cleft lip and palate, incidence, risk factors, associated anomalies.

Introduction

Cleft lip and palate are the most common congenital malformation in the head and neck throughout the world. Surgical techniques for appropriate treatment of cleft lip and palate have developed very rapidly, but the epidemiologic study for prevention remains in its infancy [(1).] Blacks have the lowest incidence rate of clefts [(2)] The highest incidence rate was found in native Americans as 3.74 per 1000 live births followed by Japanese subjects as 3.36 per 1000 live births [(3)]. In USA, these anomalies affect about one in every 700 children, with a slightly lower incidence rate of 1.3 per 1000 live births [(4)]. Most of the epidemiological studies have been carried out in USA and Europe. Asians are at higher risk than whites or blacks [(5, 6)].

The cause of cleft lip and palate is known to be multifactorial in nature and includes both environmental and genetic factors.[7] Medication, 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.[8-10] .The management of cleft lip and palate is very important and sensitive subject because these children once born, start their life with difficulty in the basic instinct of suckling, and are prone to develop deep seated disturbances about their life image[11] .There is also the maternal guilt of giving birth to a deformed child[12].

The aim of this study was to assess the incidence of cleft lip and palate in Erbil city, Kurdistan Region of Iraq and to investigate the possible relation of some risk factors to cleft lip and palate.

Materials and methods

The present study is a retrospective epidemiological study, the data was obtained from the records of Raparin paediatric and maternity hospital in the center of Erbil city. The file records of live births during a period from January 2000 to January 2008 were reviewed for the occurrence of cleft lip and palate. The cleft cases were evaluated for site and type of cleft and sex of the infant. Some risk factors were also estimated including; maternal age and smoking, positive family history of clefts, consanguineous marriage and birth weight of the infant .An identical number of non cleft infants were chosen for comparison. Chi square test was used and *P* value ≤ 0.05 was considered significant.

Results

Within a period of 8 years, between January 2000 and January 2008, 121 out of 60418live birth were born with cleft lip and/or cleft palate. This average approximately 2 infants per 1000 live birth. There was only 18 cases of cleft lip (15%), 37 cases of cleft palate only (30%), and 66 cases of cleft lip and palate combined (55%). Table (1)

Observing the location of clefts, left sided cleft lip was the most common (49 cases), followed by 24 cases of right sided cleft lip and 11 cases of bilateral cleft lip. The ratio with respect of left or right or bilateral was approximately 4.5:2:1. Table (2)

The incidence in male was greater than female in cleft lip group (M: F= 1.3:1.0). The incidence in the male was three times greater than that of the female in the combined cleft lip and palate group (M: F= 3.1:1.0). On the other hand, there was a higher incidence in the female than in the male in cleft palate group (M: F= 0.7:1.0). Table (3)

Congenital abnormalities associated with cleft cases were noted in 9 cases (7.4%). Six of them in the cleft palate group, two cases in cleft lip group and the last case in combined cleft lip and palate group. (table 4). Congenital heart disease was the most common abnormality (4/9) cases. One case for each of the following abnormalities was recorded: hernia, haemangioma, accessory ear lobe, congenital megacolon, and Pierre-Robin syndrome. Table (5)

The significance of some risk factors for cleft lip and /or palate, using Chi-square test is listed in table (6). As shown in the table, infant's sex and site of family residence were not significantly different from those of non cleft infants. However, maternal age, maternal smoking,

consanguineous marriage, positive family history of clefts and low infants birth weight in cleft group were significantly different from non cleft group.

Discussion

In the majority of isolated cleft lip and palate, the aetiology has been considered to be multifactorial; combined genetic and environmental factors. According to Fogh-Andersen in Denmark [13], the incidence of cleft lip and palate doubled during the last 50 years and tripled during the last 100 years. A 30 years follow-up study of Rintala et al in Finland [14] also showed an obvious tendency toward a rapid increase in cleft lip and palate. Authors associate it with a decrease lethality of newborns, usage of teratogenic medicines during pregnancy, with an increasing number of marriages between persons with cleft.

Careful analysis of the published literature casts doubt on the validity of the rates of cleft lip and palate, because the epidemiological investigations have tended to be compromised by numerous methodological problems. It has been said that the problem of incomplete ascertainment has occurred in all of the published studies. The final prevalence figures can be affected by one or several of the following variables; the design and limitation of the study, the geographical location, the method of reporting and the population being sampled. One of the most consistent findings from these studies is a distinct racial gradient in the incidence of cleft lip and palate, with higher rate being registered among Asian and lower rate for blacks.

The present study showed that the incidence of cleft lip and palate was 2 per 1000 live births. It seems that the number of cleft lip and palate cases in Kurds is higher than other ethnic groups. The higher ratio of cleft deformity in Iraqi Kurds in Erbil city may be attributed to a genetic background. In addition, there are numerous studies linking chemical agents and medications with cleft lip and palate [15, 16] .Its clearly noted that drugs are commonly and haphazardly used during pregnancy in our community.

In Iranians, the incidence of cleft lip and palate was found to be 2.14 per 1000 live births [17].

In Pakistan, the incidence was 1.91 per 1000 live births [18]. In multiethnic Hawaii population the reported incidence was 12.5 per 100,000 live births [19]. For Australian children from Victoria report showed 7.8 per 10,000 live births [20]. In Philippines the reported incidence was 1.94 per 1000 live births [21]. In European countries the incidence was 1.4 per 1000 live births in England [22], 1.3 per 1000 live births in Italy [23], and 1.6 per 1000 live births in Slovenia [24].

In Lithuania, the incidence rate of cleft lip and /or palate for 1000 live births was 1.84 (1 per 544 live births) and in separate region of Lithuania the rates of cleft for 1000 live births was from 0.01(Kelmẽ Region) to 3.34 (Panevepys Region) [25] .The lowest incidence of cleft lip and palate was noted among black population. In African American, it was approximately 1:2500 live births [26].

Although no significant difference was noted in the incidence of cleft lip and palate between males and females, the incidence in male was greater than female in cleft lip group (M:F= 1.3:1) and the combined cleft lip and palate group (M:F= 3.1:1). A higher incidence among females was noted for isolated cleft palate (0.7:1). The same results were reported in Nigeria [27] and Iran [17]. In Sudan females comprise a higher proportion than males with a ratio of (M: F=3:10) [28].

In contrast studies from central Europe and USA showed that females are less often affected [29, 30].

The possible explanation for a higher incidence of cleft palate among females is the embryological fact that the palatal shelves in females are fusing one week later than in male, making females subjected longer to teratogenies.

Congenital heart disease is the most commonly associated abnormality in our study. The same results were also observed by Kim et al [1]. and Shin et al [31]. In associated abnormalities Greene [32] and Abyhom [33] reported that heart anomaly is the second most common finding after mental retardation.

Maternal age had a statistically significant relation to the incidence of cleft lip and palate. Habib [34] reported the same results. In contradistinction to our findings, Jamilian et al [17] and Blanco-Davila [35] reported that mother's age was not an important aetiological factor. Positive family history of cleft was reported by 15% among cleft infants in our study. Family incidence as reported by other workers varies from 6.9% [36] to 46% [37]. A significant influence of positive family history on the incidence of cleft lip and palate support the genetic predisposition for this anomaly.

In the present study, the incidence of cleft lip and palate was significantly higher among consanguineous marriage. Similarly Jamilian et al [17], Harville [37] and Theogaraj et al [38] reported the same findings.

Significant relation between low birth weight and cleft lip and palate was noted. In accordance to our study, Jamilian et al [17] and Rintala and Gylling [38] reported a lower average birth weight among infants with clefts. As cleft occurs in the first few weeks of intrauterine life and birth weight is only determined in the last trimester, low birth weight can't be a cause of cleft and the reverse may be true.

Conclusions

The incidence of cleft lip and/or cleft palate is 2:1000 births. The incidence of cleft lip and palate is two times greater than cleft palate alone, and three times than cleft lip alone. Cleft lip was two times greater on the left side than on the right side. The incidence of clefts was greater in males than females.

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Table (1): Distribution of cleft type.

Type of cleft	No.	%	Incidence in 1000 live birth
Cleft lip	18	15%	0.30
Cleft palate	37	30%	0.61
Cleft lip&palate	66	55%	1.09
Total	121	100%	2.00

Table (2): Location of cleft lip with or without cleft palate.

Side of cleft	No.	Ratio
Left	49	4.5
Right	24	2.0
Bilateral	11	1.0

Table (3): Sex distribution of cleft lip and palate.

Cleft type	Sex		Ratio (Male: Female)
	Male	Female	
Cleft lip	10	8	1.3:1.0
Cleft lip &palate	50	16	3.1:1.0
Cleft palate	15	22	0.7:1.0
Total	75	46	1.6:1.0

Table (4): Congenital anomalies associated with clefts.

Cleft type	Congenital anomalies	
	No.	%
Cleft lip	2/18	11.1
Cleft palate	6/37	16.2
Cleft lip &palate	1/66	1.5
Total	9/121	7.4

Table (5): Distribution of 9 cases of congenital anomalies associated with clefts.

Congenital anomalies	No.	%
Congenital heart disease	4/9	44.44
Hernia	1/9	11.11
Haemangioma	1/9	11.11
Accessory ear lobe	1/9	11.11
Megacolon	1/9	11.11
Pierre- Robin Syndrome	1/9	11.11

Table (6): Distribution of cleft cases according to some risk factors.

Risk Factor	Non-cleft cases n=121	Cleft cases n=121	χ^2	*P*-value
Sex				
Females	50	46	0.27	>0.05
Males	71	75		
Maternal age				
<30years	95	76	7.2	0.005*
≥30 years	26	45		
Site of family residence				
Rural	68	62	0.6	>0.05
Urban	53	59		
Maternal smoking				
Yes	15	29	5.4	0.025*
No	106	92		
Family history of cleft				
Yes	4	18	9.8	0.001*
No	117	103		
Consanguineous marriage				
Yes	13	24	3.9	0.05*
No	108	97		
Infant birth weight				
≥ 2.5 Kg	101	80	9.7	0.001*
< 2.5 Kg	20	111		

* Significant, χ^2 chi square test