CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2557682

Available online at: http://www.iajps.com ***Research Article***

CLEFT LIP AND PALATE IN ARAR CITY, KSA

[1]Shouq Amjad Almadani, [2]Nagah Mohamed Abo El-Fetoh [1]Nour Hamoud Alanazi, [1]Yasmeen Mohammed Alanazi, [1]Nujud Mohammed Alghasham, [1]Noor Awad Alanazi, [1]Reem Farhan Mater Alanazi

[1]Faculty of Medicine, Northern Border University, Arar, KSA, [2]Associate Prof., Community Medicine Department, Faculty of Medicine Northern Border University, KSA

Abstract:

Background: *Clefting of the lip, cleft palate, or both is the most common oro-facial congenital malformation found among live births.* ***Objective:*** *To determine the birth prevalence of cleft lip and palate in Arar city, KSA. To ascertain whether the birth prevalence in this region differs significantly from birth prevalence reported in similar populations.* ***Methods:*** *A cross sectional study was conducted in Arar children's and maternity hospital to find the birth prevalence of oro-facial clefts, whither it is cleft lip only, cleft palate only or cleft lip and palate, during the period from 1 January, 2018 to 31 December, 2019. We included all the births in the study time in our data. The data elements reviewed were the cleft type, mother's age at birth time, sex of the infant, and presence of other anomalies. The cleft types were classified as CL (right, left, or bilateral), CL and CP (right, left, bilateral), or CP (complete, incomplete).* ***Results:*** *During the period of data collection we recorded 17 case of cleft lip and palate, 9 males (52.9%) and 8 females (47.1). We found that the annual incidence of cleft lip and Palate among infants was 0.30%. In our study, cleft lip alone was observed more often than combined cleft lip and cleft palate or isolated cleft palate with the percentage of (64.7%, 17.6% and 17.6%) respectively. The unilateral left sided was found in 41.2% and it was more commonly involved in the cleft lip and\or palate related anomalies than the unilateral right sided cleft which was detected in 35.3% and the bilateral clefts. In our study combined cleft lip and palate was found in a complete form in 3\17 cases, 2 of them were unilateral and the other one was bilateral. Incidence of cleft lip only was 13\17 cases (76.4%). Complete cleft lip was detected in 6\17 cases, 3 of them were unilateral and the other 3 cases were bilateral whereas, cleft palate only was found in one case in an incomplete form. In our study consanguinity between parents was found in 17.6% of the cases (3\17). A positive family history for an orofacial cleft was seen in 3 of 17 patients (17.6 percent), reinforcing the strong familial genetic association seen in these conditions. In our study 88.2% of the cases had surgical treatment and the outcome of the treatment was excellent in 5.9%, very good in 29.4% and good in 41.2%.****Conclusion:*** *In our study, the annual incidence of cleft lip and Palate among infants was 0.30%. Health education of the mothers to teratogenic factors during pregnancy and to avoid consanguinity marriage must be conducted.*

Corresponding author:

Shouq Amjad Almadani,

Faculty of Medicine, Northern Border University, Arar, KSA.

QR code

Please cite this article in press Shouq Amjad Almadani et al., ***Cleft Lip And Palate In Arar City, Ksa.,*** *Indo Am. J. P. Sci, 2019; 06(02).*

INTRODUCTION:

Clefting of the lip, cleft palate, or both is the most common oro-facial congenital malformation found among live births. Cleft lip and cleft palate are problems of immense international proportions, affecting in excess of 10 million people worldwide [1]. This group of anomalies comprising clefting of facial structures and/or clefting of oral structures like hard palate is heterogeneous. It was reported that, with increases in world population and parallel increases in life expectancy, there will be an obvious increase in the numbers of people living with oro-facial clefts. Generally, oro-facial clefts occur in all races, both sexes, and all socioeconomic groups and vary internationally. Each of these cases requires several surgical procedures and complex medical treatments and together with his or her family often suffers serious psychological problems. There is no one detected cause of cleft lip and palate. However, most cases are thought to result from an interaction between the genetic predisposition and specific environmental factors and it can also be caused by chromosomal differences in individuals born with genetic syndromes [2], whoever, there are some risk factors that increase the likelihood of cleft lip and palate like Strong family history of cleft lip and palate, Exposure to certain environmental substances, such as tobacco and alcohol, prescription drugs, and illegal drugs, consanguinity between parents and mother's age at birth time [3]. The signs and symptoms associated with clefting depend on a variety of factors, including type and severity and whether both lip and palate are involved. Cleft lip with or without cleft palate is the second most common birth defect in the United States, affecting one in every 940 births and resulting in 4,437 cases every year [4]. Lack of a birth-defect registering system and an absence of national surveys on this topic in Saudi Arabia, makes the exact number of people with oro-facial clefts is unknown. A study from the Al Qassim region of Saudi Arabia indicated the highest reported incidence of clefts (2.19 per 1000 live births) with some distinct differences in the pattern of clefts as compared with other documented results [5]. However, another study from Riyadh, Saudi Arabia, reported the incidence of facial clefts as 0.3 per 1000 live births [6]. Both of these studies were limited to data from a single hospital and were based on fewer cases in addition to minimal description of epidemiologic information. We conducted this study in Arar city, KSA in a trial of determining the incidence of oro-facial clefts in the period of the study.

Key words: oro-facial clefts, incidence, malformations, risk factors.

Objectives:

To determine the birth prevalence of cleft lip and palate in Arar city, KSA. To ascertain whether the birth prevalence in this region differs significantly from birth prevalence reported in similar populations.

METHODOLOGY:

A cross sectional study was conducted in Arar children's and maternity hospital to find the birth prevalence of oro-facial clefts, whither it is cleft lip only, cleft palate only or cleft lip and palate. The study was conducted in the period from 1 January, 2018 to 31 December, 2019. We included all the births in the study time in our data. The births from these hospital accounted for nearly all of births during this time period. The data elements reviewed were the cleft type, mother's age at birth time, sex of the infant, and presence of other anomalies. The cleft types were classified as CL (right, left, or bilateral), CL and CP (right, left, bilateral), or CP (complete, incomplete).

Ethical considerations:

Data collector gave a brief introduction to the participants by explaining the aims and benefits of the study. Informed written consent was obtained from all participants. Anonymity and confidentiality of data were maintained throughout the study. There was no conflict of interest.

Statistical analysis:

We utilized the statistical package for social sciences, version 16 (SPSS Inc., Chicago, Illinois, USA) to analyze the study data. The results were displayed as counts and percentages. The X2 test was used as a test of significance, and differences were considered significant at P value less than 0.05.

Results:

From the study tables it was clear that, during the period of data collection we recorded 17 case of cleft lip and palate, 9 males (52.9%) and 8 females (47.1). We found that the annual incidence of cleft lip and Palate among infants was 0.30%. In our study, cleft lip alone was observed more often than combined cleft lip and cleft palate or isolated cleft palate with the percentage of (64.7%, 17.6% and 17.6%) respectively. The unilateral left sided was found in 41.2% and it was more commonly involved in the cleft lip and\or palate related anomalies than the unilateral right sided cleft which was detected in 35.3% and the bilateral clefts. In our study combined cleft lip and palate was found in a complete form in 3\17 cases, 2 of them were unilateral and the other one was bilateral. Incidence of cleft lip only was

13\17 cases (76.4%). Complete cleft lip was detected in 6\17 cases, 3 of them were unilateral and the other 3 cases were bilateral whereas, cleft palate only was found in one case in an incomplete form. In our study consanguinity between parents was found in 17.6% of the cases (3\17). A positive family history for an orofacial cleft was seen in 3 of 17 patients (17.6 percent), reinforcing the strong familial genetic association seen in these conditions. In our study 88.2% of the cases had surgical treatment and the outcome of the treatment was excellent in 5.9%, very good in 29.4% and good in 41.2%.

Table (1): characters of cases of cleft palate, Arar, KSA, 2018

	Frequency	Percent
Sex		
female	8	47.1
Male	9	52.9
Total	17	100.0
Mother age at the child birth		
>40	3	17.6
20-29	6	35.3
30-40	8	47.1
Smoking during pregnancy		
No	12	70.6
Yes	5	29.4
X ray during pregnancy		
No	13	76.5
Yes	4	23.5
Obesity during pregnancy		
No	12	70.6
Yes	5	29.4
Family history of cleft palate		
No	14	82.4
Yes	3	17.6
Family history of any other congenital anomalies		
No	14	82.4
Yes	3	17.6
Parents consanguinity		
No	14	82.4
Yes	3	17.6
Type of cleft palate		
Cleft palate only	3	17.6
Cleft lip only	11	64.7
Cleft both lip and palate	3	17.6
Side of cleft		
Unilateral, left side	7	41.2
Unilateral, right side	6	35.3
Bilateral	4	23.6
Type of the lesion		
Complete bilateral cleft lip	3	17.6
Complete unilateral cleft lip	3	17.6
Incomplete unilateral cleft lip	7	41.2
Incomplete bilateral cleft palate	1	5.9
Complete unilateral cleft lip and palate	2	11.8
Complete bilateral cleft lip and palate	1	5.9
Type of treatment		
Surgical	15	88.2
Medical	2	11.8

Complications of treatment		
No	14	82.4
Yes	3	17.6
Outcome of treatment		
Good	7	41.2
Very good	5	29.4
Bad	4	23.5
Excellent	1	5.9

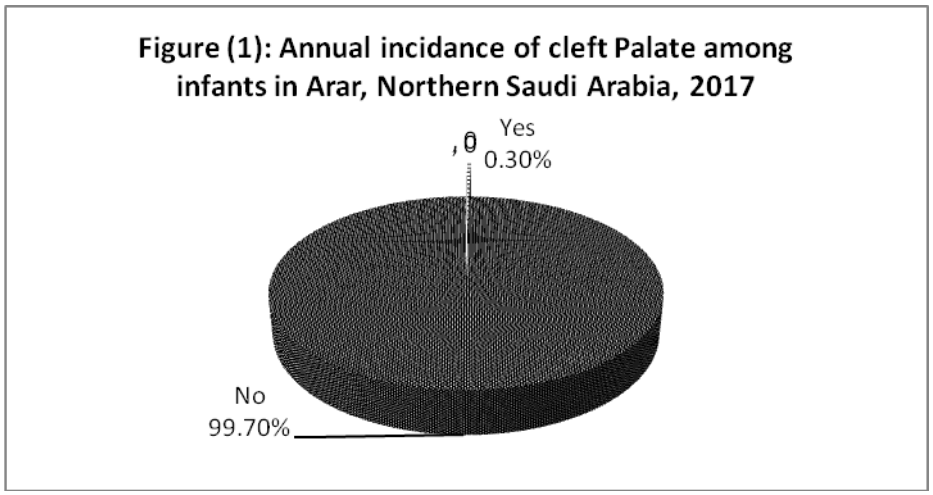

Table (2): relation between type and other characters of cases of cleft palate, Arar, KSA, 2018

Parameters	**responses**	**Type of cleft**						**Total (N=17)**
		Complete bilateral cleft lip (N=3)	**Complete bilateral cleft lip and palate (N=1)**	**Complete unilateral cleft lip (N=3)**	**Complete unilateral cleft lip and palate (N=2)**	**Incomplete cleft palate (N=1)**	**Incomplete unilateral cleft lip (N=7)**	
sex	**Female**	1	1	1	1	0	4	8
		33.3%	100.0%	33.3%	50.0%	.0%	57.1%	47.1%
	Male	2	0	2	1	1	3	9
		66.7%	.0%	66.7%	50.0%	100.0%	42.9%	52.9%
Mother age at the child birth	**20-29**	2	0	0	1	0	3	6
		66.7%	.0%	.0%	50.0%	.0%	42.9%	35.3%
	30-40	0	1	3	1	0	3	8
		.0%	100.0%	100.0%	50.0%	.0%	42.9%	47.1%
	>40	1	0	0	0	1	1	3
		33.3%	.0%	.0%	.0%	100.0%	14.3%	17.6%
Smoking during pregnancy	**No**	2	1	2	1	0	6	12
		66.7%	100.0%	66.7%	50.0%	.0%	85.7%	70.6%
	Yes	1	0	1	1	1	1	5
		33.3%	.0%	33.3%	50.0%	100.0%	14.3%	29.4%
X ray during	**No**	2	0	3	2	1	5	13

pregnancy		66.7%	.0%	100.0%	100.0%	100.0%	71.4%	76.5%
	Yes	1	1	0	0	0	2	4
		33.3%	100.0%	.0%	.0%	.0%	28.6%	23.5%
Obesity during pregnancy	**No**	3	0	2	1	0	6	12
		100.0%	.0%	66.7%	50.0%	.0%	85.7%	70.6%
	Yes	0	1	1	1	1	1	5
		.0%	100.0%	33.3%	50.0%	100.0%	14.3%	29.4%
DM during pregnancy	**No**	2	1	3	1	1	5	13
		66.7%	100.0%	100.0%	50.0%	100.0%	71.4%	76.5%
	Yes	1	0	0	1	0	2	4
		33.3%	.0%	.0%	50.0%	.0%	28.6%	23.5%
Family history of cleft palate	**No**	2	1	2	2	1	6	14
		66.7%	100.0%	66.7%	100.0%	100.0%	85.7%	82.4%
	Yes	1	0	1	0	0	1	3
		33.3%	.0%	33.3%	.0%	.0%	14.3%	17.6%
Family history of any other congenital anomalies	**No**	2	1	2	2	1	6	14
		66.7%	100.0%	66.7%	100.0%	100.0%	85.7%	82.4%
	Yes	1	0	1	0	0	1	3
		33.3%	.0%	33.3%	.0%	.0%	14.3%	17.6%
Parents consanguinity	**No**	1	1	3	2	1	6	14
		33.3%	100.0%	100.0%	100.0%	100.0%	85.7%	82.4%
	Yes	2	0	0	0	0	1	3
		66.7%	.0%	.0%	.0%	.0%	14.3%	17.6%
Type of treatment	**Surgical**	2	1	3	2	1	6	15
		66.7%	100.0%	100.0%	100.0%	100.0%	85.7%	88.2%
	Surgical and medical	1	0	0	0	0	1	2
		33.3%	.0%	.0%	.0%	.0%	14.3%	11.8%
Complications of treatment	**No**	2	1	3	1	1	6	14
		66.7%	100.0%	100.0%	50.0%	100.0%	85.7%	82.4%
	Yes	1	0	0	1	0	1	3
		33.3%	.0%	.0%	50.0%	.0%	14.3%	17.6%
Outcome of treatment	**Good**	3	1	0	1	1	1	7
		100.0%	100.0%	.0%	50.0%	100.0%	14.3%	41.2%
	Very good	0	0	1	0	0	4	5
		.0%	.0%	33.3%	.0%	.0%	57.1%	29.4%
	Bad	0	0	1	1	0	2	4
		.0%	.0%	33.3%	50.0%	.0%	28.6%	23.5%
	Excellent	0	0	1	0	0	0	1
		.0%	.0%	33.3%	.0%	.0%	.0%	5.9%

DISCUSSION:

Birth defects arise from the interplay of multiple genetic and environmental factors. Cleft lip and palate has been recognized as an important and common birth defect. Its major source of disability, preventing people from realizing their potential and contributing fully to society. Orofacial clefts contribute substantially to long-term disability in children as well as to tremendous emotional and financial stress for affected families and individuals. Oro-facial clefts are readily diagnosed in the newborn, which make their registry relatively reliable, as compared to some other congenital birth defects. However, the variety of different types of clefts, as well as the variety of conditions in which oro-facial clefts occur, require careful classification as to the individual groups with regard to their origin. This study was undertaken to establish the rate of children born with oro-facial clefts in Arar city, KSA in the period from 1 January, 2018 to 31 December, 2019.

During the period of data collection we recorded 17 case of cleft lip and palate, 9 males (52.9%) and 8

females (47.1). We found that the annual incidence of cleft lip and Palate among infants was 0.30%. This is a significantly low incidence of cleft lip and palate as compared to the figures reported in Saudi Arabia [7], in which the prevalence was 14% (19\137 cases), and in other studies [8,9]. In the contrary, our results were higher than Mohammed Mehboob Elahi's in Pakistan [10], in which the observed incidence of cleft lip and/or palate and isolated cleft palate in this study population was one per 523 live births (0.19%).

In our study, cleft lip alone was observed more often than combined cleft lip and cleft palate or isolated cleft palate with the percentage of (64.7%, 17.6% and 17.6%) respectively. The unilateral left sided was found in 41.2% and it was more commonly involved in the cleft lip and\or palate related anomalies than the unilateral right sided cleft which was detected in 35.3% and the bilateral clefts. In another study, left-sided defects were more common than right sided, which is in accordance with a study from China [11]. Similar results was found in Mohammed Mehboob Elahi's [10]. Also in A. S. Borkar's [7], the distribution ratio according to the location of cleft was L: R: Bilateral = 5: 1 : 1 for isolated cleft lip and 1: 1.8: 1 for combined CL/P deformities. This observation has been found in other epidemiologic reviews of clefts but as yet does not have a clear explanation [12, 13, 14, 15].

In our study combined cleft lip and palate was found in a complete form in 3\17 cases, 2 of them were unilateral and the other one was bilateral. Incidence of cleft lip only was 13\17 cases (76.4%). Complete cleft lip was detected in 6\17 cases, 3 of them were unilateral and the other 3 cases were bilateral whereas, cleft palate only was found in one case in an incomplete form. Similarly in another study, combined cleft lip and palate deformities were commonly manifest in a complete form as compared to isolated cleft lip or palate [7]. In the contrary cleft lip and palate was observed more often than was cleft lip or cleft palate in Aziza Aljohar's [16]. There were more boys than girls with complete bilateral cleft lip and complete unilateral cleft lip, whereas more girls presented with incomplete unilateral cleft lip. In Aziza Aljohar's [16] there were more boys than girls with cleft lip and cleft lip and palate, whereas more girls presented with CP. This is in accordance with another previous studies from Jordan, Iran, Pakistan, Nigeria, and Australia [17, 18, 19, 20, 21].

Consanguineous marriages between first and second cousins are practiced in Saudi Arabia and is a practice that remains strongly embedded within Saudi culture. A study conducted on 3212 Saudi families to investigate the prevalence of consanguineous marriages in Saudi Arabia revealed that 57.7% of the families screened were consanguineous.

In our study consanguinity between parents was found in 17.6% of the cases (3\17). Consanguineous marriages were observed in another study among 54.4% of patients' parents, which is more than our results and less than what was observed by el-Hazmi et al. [22]. However, another population study conducted only in the Riyadh area revealed a prevalence rate of 51.3% [23]. In fact, the differences in prevalence of consanguineous marriages among different areas of Saudi Arabia (highest rate of 86.6% in Samtah and lowest rate of 34.3% in Abha, both in southern Saudi Arabia) were encountered by el-Hazmi et al. [22]. But unless a population based study comparing the cleft incidence in the consanguinous parents as against non-consanguinous is carried out, consanguinity cannot be labelled as a possible aetiological factor.

A positive family history for an orofacial cleft was seen in 3 of 17 patients (17.6 percent), reinforcing the strong familial genetic association seen in these conditions. Also in another study in Pakistan a positive family history for an oro-facial cleft was seen in 18 of 106 patients (17 percent) [10], which is similar to ours.

A very limited number of children born with oro-facial clefts were treated at private hospitals. Even those who were treated initially at private hospitals were seen at some stage at either one of the two hospitals for further treatment procedures and surgical treatment is the perfect solution in such cases.

In our study 88.2% of the cases had surgical treatment and the outcome of the treatment was excellent in 5.9%, very good in 29.4% and good in 41.2%. The results of the present investigation are in close agreement with the reported prevalence rate for the mixed Arab population in Kuwait [24].

REFERENCES:

1. Jones, M. C. Facial clefting: Etiology and developmental pathogenesis—Advances in management of cleft lip and palate. *Clin. Plast. Surg.* 20: 671, 1993.
2. Beaty, T. H., Ruczinski, I., Murray, J. C., Marazita, M. L., Munger, R. G., Hetmanski, J. B., . . . Wu, T. (2011). Evidence for gene-environment interaction in a genome-wide study of nonsyndromic cleft palate. *Genetic Epidemiology*, *35*, 469–478.

3. Arpino, C., Brescianini, S., Robert, E., Castilla, E. E., Cocchi, G., Cornel, M. C., . . . Zampino, G. (2000). Teratogenic effects of antiepileptic drugs: Use of an international database on malformations and drug exposure (MADRE). *Epilepsia, 41,* 1436–1443.
4. Parker, S. E., Mai, C. T., Canfield, M. A., Rickard, R., Wang, Y., Meyer, R. E., . . . Correa, A. (2010). Updated national birth prevalence estimates for selected birth defects in the United States, 2004-2006. *Birth Defects Research Part A: Clinical and Molecular Teratology, 88,* 1008–1016.
5. Borkar AS, Mathur AK, Mahaluxmivala S. Epidemiology of facial clefts in the central province of Saudi Arabia. Br J Plast Surg. 1993;46:673–675.
6. Kumar P, Hussain MT, Cardoso E, Hawary MB, Hassanain J. Facial clefts in Saudi Arabia: an epidemiologic analysis in 179 patients. Plast Reconstr Surg. 1991;88:955–958.
7. A. S. Borkar. et al. Epidemiology of facial clefts in the central province of Saudi Arabia. Britich Journal of Plastic Surgery. 1993, 46- 673: 675.
8. Fogh-Andersen P. InherItawe of harelip and clel't palate. Copenhagen: Nyt Nordisk Forlag. Arnold Busch. 1942.
9. Srivastaba S, Bang RL. Facial cleftine in Kuwait and England: a comparative study. Br J Plant Surg 1990; 43: 457-62.
10. Mohammed Mehboob Elahi. et al. Epidemiology of Cleft Lip and Cleft Palate in Pakistan. PLASTIC AND RECONSTRUCTIVE SURGERY, May 2004 Vol. 113, No. 6.
11. Zhou QJ, Shi B, Shi ZD, Zheng Q, Wang Y. Survey of the patients with cleft lip and palate in China who were funded for surgery by the Smile Train program from 2000 to 2002. Chin Med J. 2006;119:1695–1700.
12. Chung, C. S., Ching, G. H. S., and Morton, N. E. A genetic study of cleft lip and palate in Hawaii: II. Complex segregation analysis of genetic risks. *Am. J. Hum. Genet.* 26: 177, 1974.
13. Marazita, M. L., Melnick, M., Spence, M. A., and Hu, D. N. Family study of cleft lip and cleft palate in Shanghai, China. *Am. J. Hum. Genet.* 45: 243, 1989.
14. Chuangsuwanich, A., Aojanepong, C., Muangsombut, S., and Tongpiew, P. Epidemiology of cleft lip and palate in Thailand. *Ann. Plast. Surg.* 10: 7, 1998.
15. Srivastava, S., and Bang, R. L. Facial clefting in Kuwait and England: A comparative study. *Br. J. Plast. Surg.* 43: 457, 1990.
16. Aziza Aljohar. et al. Pattern of Cleft Lip and Palate in Hospital-Based Population in Saudi Arabia: Retrospective Study. Cleft Palate Craniofacial Journal, November 2008, Vol. 45 No. 6
17. Al Omari F, Al-Omari IK. Cleft lip and palate in Jordan: birth prevalence rate. Cleft Palate Craniofac J. 2004;41:609–612.
18. Elahi MM, Jackson IT, Elahi O, Khan AH, Mubarak F, Tariq GB, Mitra Epidemiology of cleft lip and cleft palate in Pakistan. Plast Reconstr Surg. 2004;113:1548–1555.
19. Obuekwe O, Akapata O. Pattern of cleft lip and palate [corrected] in Benin City, Nigeria. Cent Afr J Med. 2004;50:65–69.
20. Vallino-Napoli LD, Riley MM, Halliday J. An epidemiologic study of isolated cleft lip, palate, or both in Victoria, Australia, from 1983 to 2000. Cleft Palate Craniofac J. 2004;41:185–194.
21. Rajabian MH, Aghaei S. Cleft lip and palate in southwestern Iran: an epidemiologic study of live births. Ann Saudi Med. 2005;25:385–388.
22. el-Hazmi MA, al-Swailem AR, Warsy AS, al-Swailem AM, Sulaimani R, al-Meshari AA. Consanguinity among the Saudi Arabian population. J Med Genet. 1995;32:623–626.
23. al Husain M, al Bunyan M. Consanguineous marriages in a Saudi population and the effect of inbreeding on prenatal and postnatal mortality. Ann Trop Paediatr. 1997;17:155–160.
24. Srivastava S, Bang RL. Facial clefting in Kuwait and England: a comparative study. *Br J Plast Surg.* 1990;43:457–462.