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Epidemiology of facial clefts in the central province of Saudi Arabia

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SUMMARY. **A pilot study collecting data both retrospectively and prospectively covering a span of 4 years (January 1989 to December 1992) was carried out at King Fahd Specialist Hospital, Al-Gassim, Saudi Arabia. The aim was to study the epidemiology of facial clefts in the exclusively Saudi population. A total of 137 cases were studied. This study gives the highest reported incidence of clefts (2.19 per 1000 live births) with some distinct differences in the pattern of clefts as compared to other documented studies.**

King Fahd Specialist Hospital, Buraidah, is the apex hospital of the pyramidal health care system practised in the central province of Al-Gassim in Saudi Arabia. This hospital caters to a population of 412000 and is meant almost exclusively for Saudi nationals. The base is provided by 120 primary health centres and 5 peripheral hospitals which have to follow a rigid protocol of referring all clefts to the plastic surgery unit in K.F.S.H. As private hospitals are non-existent in the region, our data reflect the true incidence of clefts in the region.

Materials and methods

The study carried out included both retrospective (1989–1990) and prospective (1990–1992) studies covering a total span of 4 years. A total of 140 cases were encountered, out of which 3 patients who were non-Saudis were excluded, giving a number of 137 Saudi patients.

Birth and population data were obtained from the computerised records in the Health Ministry Offices. We found that this region has one of the highest birth rates in the world of 37.96 per 1000 population.

Figures about clefts were obtained from the hospital records. Only clefts in live births were included in the study.

It was assumed that minor expressions of clefts which might have been missed by paediatricians did not constitute a significant number. Patients delivering at home and not coming to the hospital are almost unheard of in this region, due to easy availability of free health care.

Because of a high degree of health awareness and a well centralised health care system, most of the cases were referred to our unit soon after birth. Hence it was concluded that our group accurately represents the true incidence of clefts per 1000 live births in the given population in that year.

Results

Total number of live births amongst Saudis as recorded from the birth registry of the Health Ministry of the Central Province was 62557 over a period of 4 years from 1989 to 1992. When compared with the hospital records of the clefts diagnosed (total 137 cases), this gives an incidence of 2.19 cleft lip and palate patients per 1000 live births.

The breakup of the patterns of clefts showed that CL/P had an incidence of 1.886 (0.895 CL alone) per 1000 live births whereas isolated CP had an incidence of 0.304 per 1000 live births.

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. We encountered only one median cleft lip (associated with orofaciodigital syndrome) and no other facial clefts.

When severity of clefts was analysed, the ratio of incomplete:complete in isolated CL deformities was 2:1. In CL/P cases the deformities more often tended to be complete (Table 1). Also CP was present in 71.42% of bilateral CL cases as compared to 47.82% of unilateral CL cases (Table 2).

Analysis of sex incidence is shown in Table 3.

We found a high incidence of consanguinity (42%)

Table 1 Comparative distribution according to severity of cleft

	Incomplete	*Complete*
Isolated cleft lip	2	1
Cleft lip and palate	1	7
Isolated cleft palate	19	0

Table 2 % incidence of cleft palate among cases of cleft lip

	Fraser[1] *1961*	*Al Gassim 1992*
Bilateral cleft lip	86	71.42
Unilateral cleft lip	68	47.82

Table 3 Analysis of sex incidence

	Male	*Female*
Overall	4	1
Isolated CL	1.8	1
Isolated CP	1	3
Unilateral CL/P	4.5	1
Bilateral CL/P	3	1
Incomplete CL/P	5	1
Complete CL/P	3.7	1

Table 4 Associated malformations

	CL/P	*CP*
Trisomy 21	3	0
CDH	1	0
Pierre Robin	0	2
Congenital heart disease	4	1
Strabismus	1	1
Congenital hernia	2	0
Apert syndrome	1	0
Orofacial digital syndrome	1	0
	13/118 (11.02%)	4/19 (21.05%)

in the population studied. There was higher incidence of CL/P among relatives of CL/P patients and higher incidence of CP among relatives of CP patients.

The parents had slightly higher combined parental age but maternal age was not significantly higher. Most of the children were full term with normal birth weight.

Associated malformations were as shown in Table 4 with CVS malformations and trisomy 21 being the commonest.

Table 5 Incidence of cleft deformities in various parts of the world

Author and country	*Year of study*	*Incidence/ thousand live births*
Fogh-Andersen, Denmark[1]	1942	1.31
Knox & Braithwaite, UK[6]	1949–1960	1.42
Woolf *et al.*, USA[7]	1951–1961	1.51
Welch & Hunter, Canada[8]	1964–1977	2.0
Natsume *et al.*, Japan[9]	1982	2.05
Srivastava & Bang, Kuwait[3]	1990	1.48
Our study		
Al-Gassim, Saudi Arabia	1992	2.19

Table 6 % distribution according to type of clefts

	Isolated CL	*CL/P*	*Isolated CP*
Fogh-Andersen (1942)[1]	25	50	25
Fraser and Calnan (1961)[4]	21	46	33
Ingalls *et al.* (1964)[2]	16	30	54
Al Gassim, 1992	41	45	14

Discussion

Our study reveals that the central province of Saudi Arabia, which has one of the high birth rates in the world of 37.96 per 1000 population, also has a high incidence of clefts (2.19/1000 live births) (Table 5).

We found a significantly low incidence of cleft palate of 14% (19/137 cases) as compared to the figures reported in other studies.[1,3] Also whereas we have comparable figures for combined cleft lip and palate deformities, we have a very high incidence of isolated cleft lip deformities compared to other series (Table 6).

In our series left side clefts were common in isolated cleft lip deformities whereas right side clefts were more common in combined CL/P deformities, a fact which does not compare with other reports.[3]

Combined cleft lip and palate deformities were commonly manifest in a complete form as compared to isolated cleft lip or palate (Table 1).

Incidence of cleft palate among cases of cleft lip is less than the one reported by Fraser[4] (Table 2).

In contrast to the other reports our study shows that the degree of male preponderance is more with the unilateral cleft lip and palate deformities as compared to bilateral. It is also more with incomplete CL/P deformities as compared to complete as shown in Table 3.[1,5]

So far as the possible causative factors are concerned, the only fact which stood out prominently was the high incidence of consanguinity (42%). 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.

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