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Centre-based statistics of cleft lip with/without alveolus and palate as well as cleft palate only patients in Aden, Yemen

Ahlam Hibatulla Ali Esmail [a], Muhgat Ahmed Ali Abdo [b], Helga Krentz [c], Jan-Hendrik Lenz [d], Karsten K.H. Gundlach [d,*]

[a] Cleft Lip and Palate Centre, Aden University, Aden, Yemen
[b] Dept. of Oral Surgery, Faculty of Dentistry, Aden University, Aden, Yemen
[c] Research Group Biostatistics, Dept. of Medical Biometrics und Informatics (Chair: Prof. Dr. Georg Füllen), Rostock University, Rostock, Germany
[d] Dept. of Oral and Maxillofacial Plastic Surgery (Chair: Prof. Dr. Dr. Bernhard Frerich), Rostock University, Rostock, Germany

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ABSTRACT

Objective: The purpose of the study was to report the types and patterns of cleft lip with/without cleft alveolus and palate as well as cleft palate only as seen in Aden, Yemen.
Design and setting: Retrospective, centre-based study conducted at the Cleft Lip and Palate Centre, Aden University, Yemen.
Material and methods: Statistical evaluation of the data from all cleft patients who were registered at or referred to this centre during the years 2005–2011.
Results: A total of **1110** cleft patients were seen during the period studied (2005–2011). Amongst these there were 183 (16.48%) with a cleft lip and 144 (12.98) with a cleft of lip and alveolus, 228 (20.54%) had a cleft palate, and 555 (50%) had a combination of cleft lip, alveolus, and palate. The clefts were found more often in males than in females (56.5% boys versus 43.5% girls). This difference was statistically significant ($p \leq 0.001$). Statistically significant sex differences were also noted when evaluating the various cleft types. Isolated cleft palates were found most often in females. Among the cleft palate cases there were 102 (9.2%) with a cleft soft palate only. The ages of the patients were between one day and 40 years.

Two hundred and one children (18%) had a positive family history of clefts. Among the risk factors considered in this study, consanguineous marriages among cousins were found most frequently (in 48% of the cases). In contrast to this, only 10% of the mothers had reported to have been taking medication directly prior to or during the first trimester of their pregnancy. On average the mothers were neither very young nor very old.
Conclusion: The prevalence rate of orofacial cleft types among this Yemeni sample was similar to prevalence rates previously reported in white Caucasians. The present study did neither find many cases with medication before, nor during, pregnancy; there were few young or very old mothers; and the incidence of positive family histories was similar to those found in other studies on clefts. However, consanguineous marriages were encountered quite often.

1. Introduction

Cleft lip and/or palate (CL/P) is a common human congenital defect, promptly recognized at birth. Despite the variability driven by socioeconomic status and ethnic background, the worldwide prevalence of CL/P is often cited as approx. 1:700 live births; nevertheless, the different methods of assessment may lead to different prevalence rates (Mossey and Castilla, 2001). CL/P results from failure of fusion of the maxillary process with the medial nasal bulge of the frontal process or of both the palatal shelves. These fusions occur between the 4th and 7th weeks of embryogenesis (Mossey et al., 2009).

Yemen is one of the poorest and least developed countries in the Arab World, with a formal 35% employment rate (65% unemployed!), dwindling natural resources, a young population and increasing population growth: Yemen's population is increasing by 700,000 every year. This country has a high total fertility rate, at 4.45 children per woman, the 30th highest in the world. It is lower

* Corresponding author. Polostr. 19 22609 Hamburg Germany. Tel.: +49 40 820355; fax: +49 40 81979658.
E-mail addresses: karsten@gundlachclan.de, karsten.gundlach@med.uni-rostock.de (K.K.H. Gundlach).

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than the rate in Somalia, but is roughly twice as high as that of Saudi Arabia and nearly three times as high as those in the more modernized Persian Gulf States. Because of these issues, the country faces enormous challenges in her health care system.

Until recently, services to repair clefts were hardly available in Yemen, and many parents are still not aware that a child with a cleft can be effectively treated. Even health personnel may not be aware of treatment options for cleft patients. Therefore, probably only a fraction of babies born with a cleft in Yemen are presented at the Cleft Lip and Palate Centre (CLP Centre) in Aden. Over the past eight years, this Centre has worked diligently towards raising awareness of the general public about cleft lip and palate deformities. The Centre has extended its services in receiving cleft lip and palate patients and providing them with counselling, therapy, and follow-up after treatment, as well as documenting these patients in the centre's data base.

The fact that many adult patients and older children with clefts present to the centre, especially those residing in rural areas, clearly shows a backlog of older patients with unrepaired clefts. These are the patients who survived their first years in life: In a resource-poor country like Yemen where even basic health services are underdeveloped, many babies with a cleft palate develop malnutrition and pneumonia and are likely to die. Often children with facial deformities are stigmatized and teased, drop out of school, are not able to find decent jobs, and enter a downward spiral of poverty.

Therefore, repairing the cleft not only affects the physical health status of a patient but also his or her economic, social, and psychological well-being.

The majority of the plastic/reconstructive surgery patients presenting to the rehabilitation hospital, and during outreach visits to upcountry hospitals, are suffering from cleft lip and/or palate. It is therefore important to collect more data on the scope of the problem for purposes of advocating and planning of better health services.

At the same time we feel obliged to keep up with the newest publications on the various treatment modalities for clefts and the outcomes thereof (e.g. Gkantidis et al., 2013; Rachmiel et al., 2013; Gundlach et al., 2013; Paradas-Lara et al., 2013). We think that our patients need an adequate therapy and not just any treatment.

A worldwide literature research (Murray et al., 1997; Bellis and Wohlgemuth, 1999; Al-Omari and Al-Omari, 2004; Cooper et al., 2006; Gundlach and Maus, 2006; Golalipour et al., 2007; Gregg et al., 2008) indicated a lower incidence of clefts in Caucasians than in Asians. Africans are thought to have an even lower incidence, although there are only few reliable studies from Africa (Iregbulem, 1982; Khoury et al., 1983; Morrison et al., 1985; Vanderas, 1987; Ogle, 1993). The prevalence of facial clefts in the Middle East is unknown, but a few published articles give a rough idea about the incidence of clefts in the Arab region. It ranges between 0.5 per 1000 in the United Arabian Emirates (Al-Talabani et al., 1998), 0.9 per 1000 live births in Sudan (Suleiman et al., 2005), and 1.5 per 1000 live births in Oman (Rajab and Thomas, 2001) and Kuwait (Srivastava and Bang, 1990), and 2.19 in Saudi Arabia (Borkar et al., 1993). In Yemen, the exact number of people with CL/P is unknown, due to a lack of a birth-defect register and an absence of national surveys on this topic. Although the present study is using centre-based data only, it is considered the first of its kind and might fill an important information gap with its relatively large number of cases.

2. Material and methods

The medical records of all children with CL/P who were registered at the Aden Cleft Lip and Palate Centre between the years 2005 and 2011 were reviewed retrospectively and evaluated. Since its establishment with the assistance of the Cleft Centre of Rostock University, Germany, in 2004, the centre has used the Baltic Cleft Network documentation system (a basic documentation form and applying the LAHSHAL code, Kriens, 1989) for registering cleft lip and/or palate patients attending the centre. Original data collection included age, sex, type of cleft, family history of cleft anomalies, maternal and paternal ages at the time of the child's birth, associated congenital anomalies, mother's diseases before pregnancy and during the first trimester, medication prescribed/taken during mother's sickness. In addition to these data asked for in the original Baltic Network form, a query about marriages among relatives was added to the form used by the team at this Centre. The reason for this was the high frequency of pregnancies from consanguineous parents in Yemeni society.

For the purpose of this report, all cleft types were classified as CL (right, left, or bilateral cleft of lip) or CLA (right, left, or bilateral cleft of lip and alveolus), CLP (right, left, or bilateral cleft of lip [with or without involvement of the alveolus] and palate), CP (complete or incomplete cleft of palate only – with the inclusion of isolated clefts of the soft palate). The material was analysed and data on frequency of clefts, demographic variables, and risk factors are presented here.

The patients came from 10 southern governorates of Yemen and were listed according to the permanent address (region) of the patients as recorded at the time of the patient's registration.

Data were analysed using SPSS program version 15 and expressed as arithmetic means and standard deviations. An analysis of variance and Student's *t*-test were used for between-groups comparisons for continuous data and a chi-square test was used for categorical data. A p-value of ≤ 0.05 was considered to be statistically significant.

3. Results

During the 6-year study period, there were 1110 CL/P patients (636 boys and 474 girls) registered at the Aden Centre. The male to female ratio was 1.3:1. The age at the time of the first visit ranged between one day and 40 years. The median age was 9 years when calculated according to the list of registered patients at the first visit. Of the total 1110 children, 183 (16.48%) had cleft lips (CL) and 144 (12.97) had clefts of lip and alveolus; 228 (20.54%) had cleft palates (CP) with soft palate clefts only having been found in 102 of these (9.2%). Both of the latter two types of CP were noted most often in girls. Five hundred fifty five patients (50%) had a combination of cleft lip and palate (CLP). Out of the latter 156 (14.1% out of the total number of 1110 patients) had right sided, 180 (16.2%) left sided, and 219 (19.7%) bilateral clefts of lip and palate (Tables 1 and 2).

Other congenital malformations associated with CL/P or syndromic clefts were diagnosed in 30 patients (2.7%) only. Eight children with syndromic cleft had died within 1 month of birth whilst three of the non-syndromic cleft patients died during the period of this study. This gives a mortality rate of 1.0% for the 6-year period.

Table 1 shows the sexes of the various types of CL/P registered between November 2005 and November 2011. It also indicates the statistically significant differences between sexes in all cleft types

Table 1
Distribution of cleft types by sex.

Cleft types	Boys	Girls	Total	%	*p*-Value
Cleft lip	114	69	183	16.48%	0.005
Cleft lip and alveolus	66	78	144	12.97%	0.320
Cleft lip and palate	360	195	555	50%	0.003
Cleft palate	81	147	228	20.54%	0.001
Total	621	489	1110	100%	