

Prevalence of Patients With Cleft Lip and Palate who were Treated at the San Borja Arriarán Clinical Hospital in Santiago Chile, within the AUGE Healthcare Plan

Prevalencia de Pacientes con Fisuras Labio Palatinas Tratadas en el Hospital San Borja Arriarán en Santiago de Chile, en el Marco del Plan AUGE

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ABSTRACT: Cleft lip and palate (CLP) are congenital defects caused by faulty fusion of the embryonic processes that participate in the formation of oral and nasal cavities, this leads to a number of functional, social and psychological alterations. The incidence is estimated at 1/700 live birth, resulting in a high cost to the public health system. In 2005 these malformations were incorporated in the Regime of Explicit Health Guarantees (Garantías Explícitas en Salud – GES), also known as Plan AUGE, a health program developed in Chile, that has been conceived and implemented to guarantee access, quality, protection and recovery for certain pathologies. To determine which clefts are more prevalent in patients who were treated in the Hospital and compare these results are consistent with international literature, along with which gender is more affected and their association with other syndromes. Medical records of 169 patients with CLP were reviewed. Their gender, type of cleft according to its anatomical classification and their association with other syndromes were recorded. Ten percent of the CLP were associated with syndromes, there being a higher prevalence among male infants (56.8%) than females (43.2%). Incidence of cleft lip, with or without cleft palate, was higher than the incidence of isolated cleft palate. CLP has a heterogeneous distribution. This creates the need to know, which clefts are more prevalent in our patients and to compare with other results.

KEY WORDS: cleft lip, cleft palate, newborns.

INTRODUCTION

In 2005, the Explicit Guarantees of Universal Access Plan (AUGE) or Explicit Health Guarantees Plan (GES) was created in Chile. This program constitutes a health regulation which guarantees health care access, promotion, protection and recovery. Within the AUGE framework, a series of illnesses were established that would receive priority treatment and it was determined which guarantees would be associated to each health problem included in the plan.

The pathologies considered to form a part of AUGE are the most relevant from a public health point of view, and cleft lip and palate were included among

them. These pathologies consist of a series of malformations caused by improper fusing of the embryonic processes that are part of the formation of the oral and nasal cavities. Thus, the anatomy of the upper lip and/or palate is altered which in turn causes a series of alterations on a functional, psychological and social level (Markus *et al.*, 1992a, 1992b; Timmons *et al.*, 2001; Sharma *et al.*, 2012).

These clefts can be classified based on the tissue that is compromised, which is known as Anatomical Classification (Cauvi León & Leiva Villagra, 2004). Four categories are defined in this classification:

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- Cleft lip: a cleft that includes the lip and palatine foramen, including the alveolar ridge.
- Cleft palate: includes clefts that run from the soft palate up to the palatine foramen.
- Cleft lip and palate: clefts that stretch from the lip to the palate, beyond the palatine foramen.
- Atypical cleft: clefts that do not fall into any of the aforementioned categories.

Since the creation of the AUGE Plan, the Maxillofacial Surgery Service of the San Borja Arriarán Clinical Hospital (HCSBA) has become a national reference center and has provided treatment for 205 patients who are carriers of cleft lip and palate, and were born after the 2005, thus making them eligible for coverage by this health plan. The average number of patients who are treated for this pathology is 30 per year and they come from the communes of Maipo, Estación Central, Cerrillos, Pedro Aguirre Cerda and Santiago, which all correspond to the Central Metropolitan Health Service, or Servicio de Salud Metropolitano Central (SSMC).

Cleft lip and palate are considered the most frequent type of craniofacial malformations. On a global scale, it is estimated that 15.3 out of 10,000 newborns are born with this pathology (Cauvi León & Leiva Villagra). It has been determined that a direct association exists between the ethnic origin and the number of individuals that are compromised, with the greatest incidence in Asians and American Indians. The races that present the lowest incidence correspond to populations of African origin (Cauvi León & Leiva Villagra; Mossey & Castilla). Caucasians present intermediate frequency which varies from 0.69 to 2.35 per 1,000 newborns (Mossey & Castilla). When analyzing the incidence in Chile, it is estimated that the amount can reach 1.78 per 1,000 newborns (Cooper *et al.*, 2006).

In spite of all the research related to this topic, the cause of these malformations is not clear. However, they are related to a series of risk factors, genetic as well as environmental, which if modified, could decrease the incidence (Gundlach & Maus, 2006; Ministerio de Salud, 2009).

Treatment of these alterations is complex since it requires interdisciplinary management of the

surgical procedure, reconstruction of affected tissue, and psychological management of the patient's family (Mossey *et al.*, 2009). The chronology of the primary surgical treatment is quite diverse, depending on the therapeutic strategy that is being applied (Murray, 2006). With regards to this point, the San Borja Arriarán Clinical Hospital works with Delaire's chronology (France), since it allows the patient to recuperate in the briefest amount of time, the most important functions that are altered as a result of cleft lip and palate. The proposed sequence consists of operating the soft palate and lip simultaneously at six months of age. Afterwards, at eighteen to twenty-four months of age, another surgical procedure is performed to close the hard palate and alveolar ridge (Pantoja Parada & Delaire, 1996)

Considering the high incidence of cleft lip and palate as well as the complexities of its treatment, it is important to determine what types of clefts appear more frequently in the population.

The purpose of this study is to determine which types of clefts are more prevalent in patients who received treatment at the San Borja Arriarán Clinical Hospital, in Santiago, Chile.

MATERIAL AND METHOD

For the present retrospective study, the institutional review board (IRB) represented by Dr. Roberto Pantoja in charge of the department, with approval of the protocol.

Using the database of 205 patients, who had been admitted to the San Borja Arrarián Clinical Hospital to receive treatment for cleft lip and palate under the AUGE Plan, 169 clinical charts from the years 2005–2012 were analyzed.

The following clinical data of the patients was registered using Microsoft Excel: year of birth, age, sex and diagnosis. In the case of cleft lips, the affected side was considered and whether the CL/P was associated to a syndromic disorder as well.

The information was processed and statistically analyzed using frequency calculation techniques, means, and Chi-squared analysis using the Systat 13 program.

RESULTS

The clinical background information of 169 cleft lip and palate patients was obtained. These patients were born between 2005 and 2012 and were being treated at the San Borja Arriarán Clinical Hospital under the AUGE Plan. Of the total number of patients, it was determined that 16 were carriers of syndromic CL/P, and mainly affected by Goldenhar, Pierre Robin, Velocardiofacial and dysmorphic syndromes, corresponding to 10% of all patients (Chi squared= 111.059, $p < 0.005$).

When analyzing the distribution of CL/P based on sex (Table I), it can be seen that a higher percentage of compromised patients are male (56.8%) with a lower percentage being female (43.2%). With regards to women, they present a greater incidence of clefts compromising the palate in an isolated manner (26.04%) when compared to men (21.3%). The differences observed based on sex are statistically significant (Chi squared= 10.109, $p = 0.018$).

With regards to the tissues that are compromised (Table II), the most prevalent cleft is cleft palate (CP),

which represents 47% of all cleft lip and palates; followed by clefts that compromise the lip and palate, corresponding to 35%. The least frequent clefts are those compromising the lip, with or without the primary palate, representing 17% of these malformations. Atypical clefts, representing only 1%, were also detected. The differences observed between the different types of clefts were statistically significant (Chi squared = 83.521, $p < 0.005$).

Regarding compromise of the lip, it can be seen that isolated cleft lips are observed more frequently on the left side (64% of cases), with this difference being statistically significant (Chi squared= 14.00, $p = 0.01$).

The same occurs in a cleft lip and palate, which also compromise the left side more than the right side (54%); these differences are also statistically significant (Chi squared= 15.898, $p < 0.005$). If all the clefts that compromise the lip are considered, it can be seen that 57% correspond to the left side, 17% to the right side and 25% affect the lip bilaterally (Table III).

Table I. Distribution of Cleft lip and palate (CLP) by anatomical classification and sex.

Diagnosis/Sex	Men		Women		Total	
	n	Percentage	n	Percentage	n	Percentage
Cleft Lip and Palate	41	24.26%	18	10.65%	59	34.91%
Cleft Palate	36	21.30%	44	26.04%	80	47.34%
Cleft Lip	17	10.06%	11	6.51%	28	16.57%
Atypical Cleft	2	1.18%	0	0.00%	2	1.18%
Total	96	56.80%	73	43.20%	169	100.00%

Table II. Distribution of Cleft lip/palate (CL/P) by anatomical classification.

Diagnosis	n	Percentage
Cleft Lip and Palate	59	34.91%
Cleft Palate	80	47.34%
Cleft Lip	28	16.57%
Atypical Clefts	2	1.18%
Total	169	100.00%

Table III. Distribution of cleft lip.

Diagnosis/Affected side	Left		Right		Bilateral	
	n	Percentage	n	Percentage	n	Percentage
Cleft Lip and Palate	32	37%	7	8%	20	23%
Cleft Lip	18	21%	8	9%	2	2%
Total	50	57%	15	17%	22	25%

DISCUSSION

Cleft lip and cleft palate are the most common craniofacial malformations in the world, and in Chile, they particularly constitute a public health problem due to their high impact on a individual level and for the family. This is why it has been incorporated into the AUGE Plan, which guarantees access to complete treatment for these pathologies.

Concerning the incidence of cleft lip and palate in the San Borja Arriarán Clinical Hospital, it can be seen that most of the patients who are compromised are males (56.8%), with the exception of isolated cleft palates, which are more frequently seen in women. These results are comparable to those described in the research carried out by Cauvi León & Leiva Villagra, Mossey & Castilla, Gundlach & Maus and Sepúlveda Troncoso *et al.* (2008).

In reference to the type of cleft lip and palate observed in the San Borja Arriarán Clinical Hospital, the most prevalent clefts are cleft lips, with or without compromise of the palate, followed by isolated cleft palates. These results are similar to those obtained in another study carried out in Chile by Palomino *et al.* (1997), who studied the incidence in several health care centers in Santiago. On the other hand, in another study conducted on the Chilean population, Sepúlveda Troncoso *et al.* found a greater incidence of clefts compromising the lip and palate in comparison to isolated cleft palates. This result is contrary to the result obtained in this study in which the latter presented a greater incidence when compared to cleft lip and palate. With regards to the information available on an international level, similar results can be seen, in which cleft lips, with or without compromise of the palate, surpass isolated cleft palates (Mossey & Castilla; Palomino *et al.*).

If the side affected by the cleft lip is considered, with or without compromise of the palate, the results obtained coincide with the current literature (Gundlach & Maus; Rodríguez Dehli *et al.*, 2010). Compromise of the left side is more prevalent than bilateral or cleft lip of the right side, even duplicating the amount.

CONCLUSIONS

Results obtained with regards to cleft lip and cleft palate in patients treated at the San Borja Arriarán Clinical Hospital under the AUGE Plan:

- Only 10% of patients suffering from a type of cleft have a syndromic condition.

- A greater prevalence can be seen in male patients (56.8%) than in female patients (43.2%).

- The most common type of cleft is cleft lip, with or without compromise of the secondary palate (52%), more than isolated cleft palates (47%).

- The left side is more frequently affected with a cleft lip (57%) than the right side (17%). Bilateral clefts total 25% of compromised patients.

- Give the prevalence of this pathology, its incorporation into the AUGE plan allows its resolution on time.

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RESUMEN: Las Fisuras Labio Palatinas (FLP) son defectos congénitos causados por una mala fusión de los procesos embrionarios que participan en la formación de las cavidades oral y nasal, que generan una serie de alteraciones funcionales, sociales y psicológicas. La incidencia de las FLP se estima en 1/700 nacidos vivos, lo que genera un importante gasto a nivel de salud pública. En el 2005 éstas malformaciones fueron incorporadas al "Régimen de Garantías Explícitas en Salud (GES)", también conocido como Plan AUGE, éste es un programa de salud concebido y creado para garantizar el acceso, calidad, protección y recuperación de ciertas patologías. Determinar que fisuras con más prevalentes en pacientes que han sido tratados en el Hospital y comparar estos resultados con la literatura internacional, además determinar que género se ve más afectado y si existe asociación con síndromes. Se revisaron las fichas clínicas de 169 pacientes con FLP. Registrándose el género, el tipo FLP de acuerdo a su clasificación anatómica

y la asociación con otros síndromes. Resultados: 10% de las FLP presentaban otro síndrome asociado. Hay una mayor incidencia en el género masculino (56,8%) que en el femenino (43.2%). Las fisuras de labio, con o sin compromiso del paladar, son más frecuentes que las fisuras labiales aisladas. Las FLP tienen una distribución heterogénea. Esto crea la necesidad de conocer que fisuras son más prevalentes en nuestros pacientes con el objetivo de compararlas con otros resultados.

PALABRAS CLAVE: fisura labial, fisura palatina, fisuras labio palatinas, neonatos.

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