Original Research Paper Medical Science

A Study of Associated Syndromes with Orofacial Cleft in Children

Venkata subramanian R	Associate Professor, Department of Pediatrics, Thoothukudi Government Medical College and Hospital, Tamilnadu, India
Padmanabhan R	Associate Professor, Department of Pediatrics, Thoothukudi Government Medical College and Hospital, Tamilnadu, India
*** Heber Anandan**	Senior Clinical Scientist, Department of Clinical Research, Dr.Agarwal's Healthcare Limited, Tamilnadu Chennai * Corresponding Author
Priyatharisini K	Senior Resident, Department of ENT, Tirunelveli Government Medical College and Hospital, Tamilnadu, India

ABSTRACT

Introduction: *Orofacial cleft are one among the most common congenital anomalies in children. There is a wide range of syndromes with orofacial cleft.*

Aim: *Aim of this study to identify associated syndromes among children with orofacial cleft.*

Methods: *Prospective observational study was done in pediatrics with orofacial cleft. Clinical examination and presence of associate anomalies were assessed with Echo cardiogram, USG abdomen. CT brain/ X-ray were done for required cases.*

Results: *4 recognized syndromes were found among the 23 cases of orofacial clefts with associated anomalies.*

Conclusion: *Orofacial cleft most commonly associated with musculoskeletal, CNS, CVS anomalies. Early antenatal diagnosis of these syndromes may help to plan treatment and follow up.*

KEYWORDS : Cleft lip, Cleft palate, Orofacial cleft, syndrome

INTRODUCTION

Orofacial clefts were associated with wide range of syndromes. Recent survey list 153 syndromes involving orofacial clefts of which 79 were monogenic. About 60% are manifestation of mutant genes and 40% don't seem to be familiar. Specific environmental agents can be implicated in only a very small proportion of cases, although cleft lip or cleft palate does seems to occur occasionally syndromes caused by teratogens such as rubella and thalidomide. Certain mutant genes may cause isolated cleft palate in some cases and cleft lip with or without cleft palate in others, examples the dominantly inherited lip-pit syndrome. It has been estimated that less than 3% of all cases of orofacial clefts represent a syndrome of some kind and that those with a genetic basis are more likely to have isolated cleft lip palate than cleft lip with or without palate. The purpose of the present study to document incidents of cleft lip with or without cleft palate, cleft palate associated with syndromes and emphasis the importance of diagnosis and counselling with family regarding prognosis and risk of recurrence.

AIM

Aim of this study to identify associated syndromes among children with orofacial cleft.

MATERIALS AND METHODS

Prospective analytical study was done Institute of Social Pediatrics, Stanley Medical College Hospital, Chennai. Institutional Ethics Committee approval and informed consent from the children parents were obtained. Children in the age group up to 12 years with congenital oral clefts, with all degree of severity and occurring alone or a part of syndromes were included in study. All acquired cases of oral clefts were excluded. All children undergo clinical examination, age, gender, birth order, family history, consanguinity, antenatal risk factors and details examination for presence of associate syndrome. Echocardiogram, USG abdomen was done for all cases. CT brain/ X-ray done for whenever necessary.

RESULTS

The study sample consisted of 106 cases. Of these 55 cases were males and 51 cases were females. Among the total number of oral cleft cases 19 cases were cleft lip, 69 cases were lip with palate and 20 cases were cleft palate alone. Among the total number oral cleft cases (106) had associated anomalies. 14 male cases and 9 female cases were associated with anomalies.

Orofacial anomalies were the most common anomalies followed in sequence by musculoskeletal, CNS, CVS anomalies. Four recognized syndromes were present among the 23 cases with associated anomalies. Total number of oral cleft cases 106, among these Cleft lip cases were 19 (17.92%), Cleft lip with Palate cases were 69 (65.09%) and Cleft palate cases were 18 (16.98%).

TABLE 1 TYPE OF ORAL CLEFTS

Sl. No.	Types	Children (%)	95% CI
1.	Cleft Lip	19 (17.92)	11.15 – 26.57
2.	Cleft lip with Palate	69 (65.09)	55.23 – 74.09
3.	Cleft Palate	18 (16.98)	10.39 – 25.50

2 cases (8.7%) of cleft lip had anomalies and 16 cases (69.9%) of cleft lip with palate had anomalies and 5 cases (21.7%) of cleft palate had associated anomalies.

TABLE 2 ASSOCIATED ANOMALIES SYSTEMWISE (n=106)

Sl. No.	System	Children (%)	95% CI
1.	Oro facial	23 (21.7)	(82.2 – 100)
2.	Musculoskeletal	9 (8.5)	(20.5 – 61.2)
3.	CNS	7 (6.6)	(14.1 – 53.0)
4.	CVS	6 (5.66)	(11.1 – 48.7)
5.	Skin	3 (2.85)	(2.78 -33.58)
6.	Renal	1 (0.94)	(0.2 – 24)

The above table shows 23 cases (21.7%) had orofacial anomalies, 9 cases (8.5%) had musculoskeletal anomalies, 7 cases (6.76%) had CNS anomalies, 6 cases (5.66%) CVS anomalies, 3 cases (2.85%) had Skin anomalies and 1 case (0.94%) had renal anomaly. Among 19 cleft lip cases had 1 CNS anomaly and 1 musculoskeletal anomaly. In 69 Cleft lip cases with palate cases 3 CNS anomalies, 4 CVS anomalies, 12 orofacial anomalies, 7 musculoskeletal anomalies, 1 renal anomaly and 1 skin anomaly were present. In 18 Cleft palate cases 3 CNS anomalies 2 CVS anomalies, 11 Orofacial anomalies, 1 musculoskeletal anomaly and 2 skin anomalies were noted. Total anomalies of cleft lip, cleft lip with palate and cleft palate were 2, 28, 18 respectively. Associated orofacial anomalies with oral clefts Megalo cornea 1 (4.3%), Coloboma 1 (4.3%), Hypertelorism 2 (8.6%), Flattened nasal bridge 2 (8.6%), Beaked nose 1 (4.3), Low set ears 2 (8.2%), Micro ostia 3 (13%), Bifid Uvula 2 (8.6%), Hypoplastic Maxilla 2 (8.6%), Hypognathia 3(13%), Retrognathia 2 (8.6%)

TABLE 1 OROFACIAL ANOMALIES

Sl. No.	Types	No. (n = 23)
1.	Megalo cornea	1 (43)
2.	Coloboma	1 (4.3)
3.	Hyperteleroism	2 (8.6)
4.	Flattened nasal bridge	2 (8.6)
5.	Beaked nose	1 (4.3)
6.	Notched nasal tip	1 (4.3)
7.	Hypoplastic Alar Nasi	1 (4.3)
8.	Low set ears	2 (8.6)
9.	Micro ostia	3 (13)
10.	Bifid Uvula	2 (8.6)
11.	Hypoplastic maxilla	2 (8.6)
12.	Hypognathia	3 (13)
13.	Retrognathia	2 (8.6)

TABLE 2 SYNDROMES ASSOCIATED WITH ORAL CLEFTS

Sl. No.	Types	No. (n=8)
1.	Holt Oram Syndrome	1
2.	Noonan's Syndrome	1
3.	Pierre Robin's Syndrome	2
4.	Multiple congenital anomalies	7
5.	Arnold Chiari Malformation	1

The above table shows cases with Holt oram syndrome 1, Noonan's syndrome, Pierre Robin's Syndrome 2, Multiple congenital anomalies 7, Arnold Chiari Malformation 1.

DISCUSSION

In 106 cases, 55 cases were males and 51 cases were females. J.Womersly et al in their study reported that males predominated in cleft lip group and females predominated in cleft palate. Milerad et al in their study reported 21% had associate malformations, in our study we reported 21.7%. Rustemeyer et al in their study in their study reported CNS anomalies 16%, CVS 15%, musculoskeletal 8%, in our study we reported 39% musculoskeletal, 30% CNS, 26% CVS. P A Boyd et al in their study antenatal diagnosis with sonography reported high prevalence neural tube defect in cleft cases. Incidence of Holt-oram syndrome in our study is 4%, which is due to mutation of TBX5 gene Philip Stanier et al. Tomoki N et al craniofacial developmental fields might be affected in some congenital Syndromic presentations, 4% of orofacial clefts found in our study. Robert J et al shown fewer than 20% of cleft palate, in our study 8% of incidence found. Marina Kos studied the head and neck congenital malformations of the CNS , 4% of incidence found in our study. 30% of multiple congenital anomalies were found in our study; Milerad J et al found 15% in his prospective study

CONCLUSION

Orofacial cleft were most commonly associated with musculoskeletal, CNS and CVS anomalies. This study emphasis the importance of diagnosis and counselling with family regarding prognosis and risk of recurrence. Routine fetal echocardiogram and USG screening may help to plan treatment and follow up.

REFERENCE

1. Stoll C, Alembik Y, Dott B. Associated malformations in cases with oral clefts. Cleft Palate Craniofac J. 2000 Jan;37(1):41-7.
2. Liang CD, Huang SC, Lai JP. A survey of congenital heart disease in patients with oral clefts. Acta Paediatr Taiwan. 1999;40(6):414-7.
3. Womersley JStone D. Epidemiology of facial clefts. Archives of Disease in Childhood. 1987;62(7):717-720.
4. Milerad J, Larson O, Hagberg C, Ideberg M. Associated Malformations in Infants With Cleft Lip and Palate: A Prospective, Population-based Study. Pediatrics 1997;100(2):180-186.
5. Rustemeyer J, Gunther L, Krause HR, Petersen S, Thieme V, Bremerich A. Associated anomalies in lip-maxillopalatal clefts in German. Mund Kiefer Gesichtschir. 2000;4:274–277.
6. Philip Stanier, Gudrun E. Moore. Genetics of cleft lip and palate: syndromic genes contribute to the incidence of non-syndromic clefts. Human Molecular Genetics, 2004; 13(1) R73–R81
7. Tomoki Nakamuraa, James Gulicka, Ronald Prattb Jeffrey Robbinsa. Noonan syndrome is associated with enhanced pERK activity, the repression of which can prevent craniofacial malformations. PNAS. 2009; 106(36) 15436–15441
8. Robert J. Shprintzen, The Implications of the Diagnosis of Robin Sequence, The Cleft Palate-Craniofacial Journal. 1992;29(3):205-209.
9. Marino Kos. Head and Neck Congenital malformations. Acta Clin Croat 2004; 43:195-201