THE OROFACIAL CLEFT PHENOME

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Location: Lecture Hall Von Behring, Alfred Nobels Allé 8, plan 9 (Hiss A), Karolinska Institute, Flemingsberg

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ABSTRACT

Introduction: The global average for prevalence in births with orofacial clefts is 9.92 per 10,000. Variability in prevalence could be as much as a seven-fold difference in different ethnicities. Precise phenotyping and subphenotyping were essential in understanding the orofacial cleft phenome. Accurate characterizations to identify biomarkers in different cleft phenotypes would refine the diagnosis to advance personalised medicine in future prevention and treatments.

Aims: To establish the descriptive epidemiology of infants from different ancestries born with orofacial clefts, and to determine the primary and secondary dental anomalies and maturity in infants and children with different cleft-types.

Materials: Study I. Birth Defects Registry records of population live births of multiethnic infants in Singapore, with syndromic and non-syndromic orofacial clefts born in 2003 to 2012. Study II & III. Records of population live births of Northern European Danish infants with non-syndromic isolated cleft lip and isolated cleft palate born in 1976 to 1981. Study IV & V. Records of a cohort of consecutive children with non-syndromic unilateral cleft lip and palate treated in Singapore from 2010 to 2017.

Methods: Study I. Retrospective population-based study of cleft-associated live births of different ethnicities to determine prevalence, trends, heterogeneity in cleft malformations, anomalies associated with cleft defects, and infant mortality rate. Study II and III. Retrospective population-based study of Northern European Danish infants with isolated unilateral cleft lip and isolated cleft palate to determine primary and secondary dentition anomalies and longitudinal dental maturity at 2 and 22

months of age. Study IV and V. Retrospective case-control cohort study of Singaporean children with unilateral cleft lip and palate to determine secondary dentition anomalies and longitudinal dental maturity at 5 to 9 years and 9 to 13 years.

Results: Study I. The overall population prevalence of cleft live births was 16.72 per 10,000 with a flat trendline over ten years. Ethnic-specific prevalence varied: Chinese, 17.17; Malay, 16.92; Indian, 10.74; and mixed ethnicities, 21.73. The infant mortality rate was 4.76%. Study II and III. There were no primary nor secondary dental anomalies in unoperated infants with isolated cleft palate. There were primary and secondary dental anomalies in infants with unilateral cleft lip. Dental maturity was delayed in infants of both cleft-types. Study IV and V. A high frequency of secondary dentition anomalies was detected in children with unilateral cleft lip and palate. Dental maturity was delayed and asymmetric with greater delay on the cleft side that normalised during adolescence.

Conclusions: The prevalence of cleft live births was ethnic-specific and the mortality rate of infants with clefts was higher than the population norm. Infants with isolated cleft palate had no primary nor secondary dentition anomalies. Primary and secondary dental anomalies were present in infants and children with unilateral cleft lip, with and without cleft palate. Delayed dental maturity was present in infants and children with clefts.