Relation of Birth Weight with Time of First Deciduous Tooth Eruption in Infant Born

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Abstract- The deciduous teeth play a very important role in proper alignment, placing and occlusion of permanent teeth. Calcification of deciduous teeth begins during the fourth month of fetal life, and by the end of sixth month all of the deciduous teeth have begun calcification. Eruption date is variable and timing of eruption "runs in families". Delay of deciduous teeth eruption, especially the first teeth cause nutritional problem for infant and some worries for family. In this study we compare the time of eruption of first deciduous teeth in infant with their birth weight. A total of 148 infant who born at Shariati Hospital in Tehran in 2004- 2005 consecutively entered the study. Other data such as sex, birth weight, gestational age and time of first tooth eruption were collected. The mean birth weight was 3220 ± 420 grams. 5.5% of cases were less than 2500 grams and 19.9% were over 3500 grams. The patients were followed weekly since third month of birth till the time of their first tooth eruption and the data was analyzed. The mean age of eruption of first tooth was 7.68 ± 1.84 months. The results showed a reverse linear relationship between first deciduous tooth eruption and birth weight. So delayed tooth eruption may relate to birth weight.

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Key words: Infant, deciduous teeth, eruption, birth weight

Introduction

The deciduous teeth play a very important role in the proper alignment, placing and occlusion of permanent teeth. The deciduous incisor teeth are functional in the mouth for approximately five years, while deciduous molar are functional for approximately nine years (1). Calcification of deciduous teeth begins during the fourth month of fetal life, and by the end of sixth month all deciduous teeth have begun calcification. Like every other biological process, the time of calcification and eruption of the deciduous teeth is subject to several individual variants. This process may be affected in infants by their birth weight, however all deciduous teeth usually erupt between 24 and 36 months of age. Currently there is some controversy about relation between birth weight and time of first dental eruption. In a study done by Viscardi and co-workers, the delay of eruption of deciduous teeth was shown in low birth weight (LBW) and premature infants (2).

Lowoyin *et al.* (1996) showed the number of erupted teeth was related to age of the infant and to some extent to weight of them (3). Fadavi and co-workers' (1992) study on LBW and very Low birth weight (VLBW) infant showed that premature infants had low numbers of erupted teeth in compression with control (4). So, this study was done to determine the relation of birth weight with time of first dental eruption in the infants born at Sharati Hospital in 2004.

Patients and Methods

In this prospective study, a group of 148 term neonates (GA=38-42 wk) born at Shariati Hospital from August to December in 2004, who had no history of birth problem or any diseases were consecutively entered the study.

After receiving ethical committee approval, the characteristics of every infant such as sex, mother's age, type of delivery, birth weight and head circumference were recorded in pre-designed questionnaires. Then after 3 months of age, follow up was performed weekly by a pediatrician until the first clinical evidence of tooth structure became visible in the oral mucosal membrane

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(according to text) (1) and type of milk consumption, vitamin, usage, history of any severe infectious disease and hospitalization were recorded.

Descriptive analysis of presented data was done through tables and deductive one was analyzed by Pierson correlation- co efficient, chi-square test and univariant linear regression. A *P value* less than 0.05 was considered to be statistically significant. Analysis of data was performed using SPSS software version 12 (SPSS Inc., Chicago, IL).

Patients that their mother had any diseases with effect on tooth eruption, and a few patients with poor follow ups were excluded from study.

Results

148 term neonate were studied the number of male and female infant was 64 and 84 respectively. 5 cases were omitted due to poor follow up 92.6 percent of mothers were completely healthy and 7.4% had other diseases with no effect on dental eruption (like D.M. heart disease, HTN).

The mean birth weight was 3.22 ± 0.42 kg. The mean head circumference was 34.6 ± 1.3 cm. 5.5% of infant had low birth weight (less than 2500gr), 74.7% had birth weight of 2.5-3.5kg and 18.2 percent was over 3.5 kg. 82.3% of infant were breast fed and mean mother's age was 27 ± 5.2 years. 87.8% of infant had no any disease till the time of first dental eruption and the mean age of first deciduous tooth eruption was 7.7 ± 2.8 months.

According to Table 1, 93.3% of infant with first dental eruption before 5.5 months of age, 62% of infant with first eruption between 5.5 and 7.5 months of age, and 80.8% of infant with first deciduous dental eruption after 7.5 months of age had birth weight between 2.5-3.5 kg.

The time of first tooth eruption in 51.6% of female infants and 48.2% of male infants was after 7.5 months of age. The time of first deciduous tooth eruption had no significant statistical relation with sex (*P = 0.263*).

The type of delivery (C/S or NVD) had no significant statistical relationship with time of first deciduous tooth eruption.

The birth height and birth head circumference had no statistical correlation with time of first dental eruption. The birth weight and time of first deciduous dental eruption had reverse linear relation and with use of linear regression, the time of first deciduous dental eruption (month of age) is estimated by birth weight in this population.

Y=10.79-0.219X

Y=time of first eruption

X=birth weight

Discussion

This study showed that birth weight of infant and time of first deciduous tooth eruption had a reverse linear relationship (*P = 0.008*). This means that with increase of birth weight, the deciduous tooth erupts earlier and with decrease of birth weight, the eruption time is later. This result is similar with the study of Fadavi *et al. (1992)* (4).

Lowoyin *et al.* (1996) study also showed that birth weight and age of infants had effect on the time of first dental eruption (3). In study performed by Shuper and co workers (1992), no significant statistical relation between anthropometric measurement (like birth weight, birth height and head circumference) with age of first dental eruption (5). But in our population the birth weight and not birth height and head circumference had reverse relation with time of first dental eruption. Birth height of infants showed no meaningful relation with time of eruption of first tooth that is similar to the results of Haddad et al. study. They reported no relationship between these two parameters (6).

The study of Cho and Yang (2001) on Korean Infants showed that teeth erupt earlier in male infants than female ones, but we didn't observed similar results

This study shows that time of first deciduous tooth eruption has a reverse linear relation with birth weight, but no significant statistical relation exists with birth height and head circumference, mother's age, type of delivery and sex of infants. These finding is similar to Harris and et al (1993) study (9).

We recommend further studies on infants with LBW, VLBW and extreme low birth wseight (ELBW) and relation of these with time of first dental eruption.

Table 1. Distribution of birth weight and time of first tooth eruption

WT(kg)	Time of first tooth eruption						Total	
	<5.5mo		5.5-7.5mo		>7.5mo			
<2.5	0	0%	3	5.2%	5	6.8%	8	5.6%
2.5-3.5	14	93.3%	36	62.8%	59	80.8%	109	76.2%
>3.5	1	6.7%	16	32.8%	9	12.3%	26	18.2%
total	15	100%	58	100%	73	100%	149	100%

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