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Environmental Survey of Dental Treatment for Intensive Care Infants under General Anesthesia

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Summary

To investigate positive inhibitory measures against severe caries thought to develop in nursing infants, we examined the nursing environment of intensive care infants under general anesthesia at Matsumoto Dental College's Department for dental treatment from January 1989 through December 1993.

Introduction

According to many reports including a fact finding study of odontopathies, deciduous caries have decreased since its peak in the 1950's^{1,2)}. Deciduous caries, which involves multiple mutually-related factors from the onset, is considered to be greatly influenced by the infant's nursing environment and in particular, in infants with immature dental quality just after eruption. Despite recent decreases in the number of caries, deciduous caries tends to bipolarize into severe and slight caries to a remarkable extent in younger infants. Therefore, to investigate positive inhibitory measures against severe caries thought to develop in nursing infants, we examined nursing environments of intensive care infants under general anesthesia at our Department between January 1989 and December 1993.

Materials and Methods

The subjects included 102 infants with severe caries more than one tooth (50 males, 52 females), subjected to intensive treatment under general anesthesia for reasons of early age, non-cooperation, remote site of caries and others similar factors.

In these 102 cases, information regarding living environment, suckling nutrition in infancy, weaning period, regularity of suckling, possible unbalanced dietsnacking, quantity and severity of caries condition, type and duration of treatment, age at onset of treatment, and toothbrushing habits

obtained from questionnaires and interviews with guardians were extracted and analyzed.

Results

1. Age.

The infants treated under general anesthesia were predominantly 3 years of age, followed by those 2 years of age. These 2- and 3-year old infants represented 73.5 % of all affected infants (Table 1).

2. Feeding.

In descending order suckling was done by breast, followed by mixed and artificial formulas. Regularity of suckling was as low as 22.5 % overall. Automatic feeding being 61.7 % (Table 2, 3).

3. Weaning.

In terms of the mean month-age of weaning, generally, the latter was remarkably late, and

Table 1: Age

	Male	Female	total	%
0~1y	1	1	2	1.9
2 y	16	16	32	31.4
3 y	20	23	43	40.2
4 y	7	9	16	15.7
5 y	2	4	6	5.9
6 y over	2	1	3	2.9

Table 2: Suckling Unit: %

	In patient	Out patient
Mother's milk	53.3	40.5
Mixed	19.1	30.5
Artificial	28.6	29.0

Table 3: Suckling Unit: %

	In patient	Out patient
Regularly	22.5	46.5
Irregularly	77.5	53.5

Table 4: Weaning Unit: %

Age (months)	In patient	Out patient
less than 12 m	23.0	22.0
18 m	45.1	49.0
24 m	20.9	9.0
30 m	5.5	15.5
30 m After	5.5	4.5

Table 5: Eating between meals Unit: %

	In patient	Out patient
Regularly	36.3	69.5
Irregularly	57.9	26.5
Obscure	5.8	4.0

Table 6: Characters of affected infants Unit: %

	In patient	Out patient	Total
spoiled	42.1	36.5	79.4
selfish	39.2	32.0	71.9
blubberer	43.1	51.5	95.4
nervous	25.4	21.0	46.9
shy	25.4	10.5	36.4
reasonable	6.8	13.0	19.9
courageous	3.9	0	3.9
others	4.9	8.0	12.9

Table 7: Caries contracting condition Unit: teeth

c ₁	85
c ₁ ~c ₂	101
c ₂	698
c ₂ ~c ₃	238
c ₃	226
c ₃ ~c ₄	28
c ₄	70
secondary caries	8

Table 8: Anesthesia

The average operation time	176.5±38.5 m
The average anesthesia time	211.6±41.7 m
Rapid induction	26 case
Slow induction	76 case
Nasotracheal intubation	99 case
Orotacheal intubation	3 case

Table 9: Recall system Unit: cases

discontinuation	37
continuation	60
obscure	5

- 78 Osuga, *et al.* : Environmental Survey of Dental Treatment for Intensive Care Infants under General Anesthesia
- several infants were not yet completely weaned. At all, approximately 20% of the infants had an ill-defined period of weaning (Table 4).
4. Eating between meals.
- In terms of dietary habits, infants with an imbalanced diet consisting mostly of vegetables, meat and fish or solid materials represented one third of the whole. Infants permitted to snack more than twice a day represented a high percentage, and those with irregular dietary habit represented 57.8 % of the whole. A high frequency of consuming various drinks such as lactic drink, juice and the like was also noted (Table 5).
5. Characters.
- A high percentage of the affected infants, as observed by their guardians tended to be selfish, whining and spoiled (Table 6).
6. Caries contracting condition.
- Treatment tended to necessarily rely on reparation because caries ranged as high as C₂~C₃ for almost all affected infants (Table 7).
7. Anesthesia.
- Treatment time averaged 211.6±41.7 minutes. Anesthesia was performed by endotracheal intubation in all cases and by nasotracheal intubation and slow induction in a high percentage (Table 8) of cases.
8. Recall system.
- In terms of post-treatment control, 60 % of the post-intensive care infants under general anesthesia continued receiving periodic check-ups, while 36 % discontinued post-treatment (Table 9).

Discussion

Since early onset and progression of dental caries has a mutual complicated connection with oral and nursing environments, investigating their causes is important^{1,2)}. Especially, a poor nursing environment for infants frequently leads to the onset of severe caries, and thus to particularity intensive treatment under general anesthesia. As clearly shown by the present survey, attitudes of the persons responsible for infant nursing to issues such as the timing of weaning are thought to have an important influence on the degree and severity of caries. Notably, a high percentage of infants with long-term suckling or irregular snacking were seen to be the infants in this study. The necessity of the stages, of growth of oral function was also thought to be important^{3,4)}.

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抄録：全身麻酔下集中治療児の環境調査

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歯科疾患実態調査をはじめとする多くの報告から昭和30年代をピークに乳歯う蝕の軽症化と減少傾向が認められている。乳歯う蝕は多くの要因が相互に関与し発症する多因性の疾患であり、特に育児環境がう蝕罹患程度に大きく影響し、萌出直後の未熟な歯質を有する低年齢児ほどその重症度は高いとされている。しかし、近年のう蝕の減少、軽症化傾向にもかかわらず、乳歯う蝕は重度、および軽度のう蝕に二極化する傾向がみられ、特に低年齢児でその傾向が著しい。本研究では、育児の中で生じると思われる重度・重症う蝕に対する実践的な抑制の方策を検討することを目的に、1989年1月から1993年12月まで当科において施術した全身麻酔下集中治療児について調査、分析を行った。