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Oral health and caries related microflora in children during the first three months following renal transplantation

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Summary. There is little information on the oral health of children undergoing renal transplantation during the early transplant period.

Methods. Twenty-four children undergoing renal transplantation aged 4–13·2 years and their matched controls were recruited. The dmfs, dmft, DMFS and DMFT, plaque, gingivitis and gingival enlargement scores were recorded. The oral microflora was sampled and cultured for *S. mutans*, *Lactobacllus* species and *Candida* species.

Results. There was a significantly lower mean dmfs (0·3 ± 0·9; $P = 0{\cdot}03$), dmft (0·3 ± 0·9; $P = 0{\cdot}03$), DMFS (2·3 ± 5·3; $P = 0{\cdot}01$) and DMFT (1·5 ± 2·6; $P = 0{\cdot}02$), respectively, in the transplant group. There was a significantly greater mean plaque score (14·7 ± 11) for the permanent dentition, at baseline only, compared with 90 days post-transplantation (9·4 ± 10·4; $P = 0{\cdot}02$). There was a significantly greater gingival enlargement score (1·8 ± 1·4; $P = 0{\cdot}04$) 90 days post-transplantation compared with baseline. The *S. mutans* and *Lactobacillus* counts were significantly lower both at baseline ($P = 0{\cdot}0001$ and $P = 0{\cdot}004$) and 90 days post-transplantation ($P = 0{\cdot}02$; and $P = 0{\cdot}05$), respectively, compared with the controls.

Conclusions. The transplant children had less active dental disease than the controls although gingival enlargement needs careful monitoring.

Introduction

Approximately 80 children with chronic renal failure undergo renal transplantation in the United Kingdom each year [1]. The oral health of children with chronic renal failure is well documented and apart from data for gingival enlargement, there is little information regarding the oral health of children following transplantation.

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The prevalence of dental caries in patients with chronic renal failure is low [2–7] and it has been suggested that one of the reasons for this is the relatively high plaque pH recorded in these children. It has been reported that the plaque pH is directly correlated with the salivary urea nitrogen concentration [8]. The saliva pH was significantly greater in children with renal failure compared with a group of renal transplant children and a group of healthy controls. The children with chronic renal failure had significantly less dental caries than either the renal transplant or healthy children. It was suggested that because normal renal function had been restored in the transplanted patients, the risk of developing caries was increased particularly in the presence of poor oral hygiene [8].

Early workers reported no significant association between bacterial dental plaque and gingival inflammation or the amount of periodontal destruction in renal transplant recipients [9,10]. This was attributed to inhibition of the signs of periodontal disease by immunosuppressive treatment. Later investigators found a statistically significant association between plaque and gingivitis scores in renal transplant patients. Less gingivitis was recorded in patients treated with immunosuppressive drugs compared with control patients who had similar plaque scores [11,12]. The patient groups were small and different scoring systems for plaque and gingivitis were used.

Cyclosporin A and nifedipine are commonly used in patients undergoing renal transplantation both of which induce gingival enlargement [13]. The prevalence of gingival enlargement in children and adolescents has been reported to be between 15% and 85% [14–18]. Although gingival enlargement occurred more frequently in children compared with adults there was no difference in severity [19]. The development of cylosporin-induced overgrowth is associated with increased plaque accumulation [18,20,21]. Although a number of investigations have demonstrated an association between gingival enlargement and oral hygiene, it is still uncertain if poor oral hygiene is the cause or effect of overgrowth [22].

Nine of the subjects in this investigation were also included in an earlier cross-sectional study of oral health in children with chronic renal failure [7]. For data collection for the longitudinal investigation reported here following kidney transplantation, each subject was started *de novo* from baseline with a new matched control.

Methods

Ethical approval was obtained from the Research and Ethics Committees of the Institute of Child Health, the Eastman Dental Hospital NHS Trust and Camden and Islington Community Health Services NHS Trust. Written consent was obtained from the parents and verbal consent from the children.

Subjects

Children with chronic renal failure (CRF) attending the dialysis and CRF clinics and children undergoing renal transplantation were recruited from the Great Ormond Street Hospital for Children.

Controls

Children attending the Trauma Clinic in the Department of Paediatric Dentistry at the Eastman Dental Hospital and community dental clinics in Camden and Islington were matched for age, gender, ethnicity and social class with the subjects. Ethnicity was assessed using a standard but comprehensive scheme at The Great Ormond Street Hospital. Social Class was assessed using the Office of Population Censuses and Surveys Classification of Occupations [23].

Clinical procedures

Reproducibility of dental indices

Studies were completed to assess the reproducibility of recording indices for caries and the Kappa value calculated [24]. Ten full arch toothblocks were examined by the main examiner and another dental surgeon using the World Health Organization (WHO) criteria to assess interexaminer agreement [25]. The same toothblocks were examined again after one week by the main examiner to assess intraexaminer agreement [26]. Indices for dental plaque and gingivitis were recorded for 10 children by the main examiner and another dental surgeon. Indices for gingival enlargement were recorded for five renal transplant subjects on two separate occasions 1 week apart by the main examiner.

Dental caries

All teeth were examined using the WHO criteria (1987) [27] and the indices recorded as the dmfs/dmft index and the DMFS/DMFT index.

Dental plaque

Four gingivally-related quadrisections of each tooth (mesiobuccal, distobuccal, mesiolingual, distolingual) were visually examined for dental plaque deposits to give the plaque score using a modification of the index of O'Leary [28].

Gingivitis

The gingivae were visually examined for inflammation using a simplified gingival index based on the number of tooth quadrisections associated with gingival inflammation to give the gingivitis score [28].

Gingival enlargement

Gingival enlargement was recorded using the method of Seymour [29].

Microbiological procedures

Sampling was carried out using an alginate swab in the same systematic manner for each child as follows: the swab was rotated to remove plaque and saliva from the gingival margins of the buccal surfaces of the left and right last two posterior maxillary teeth, the gingival margins of the lingual surfaces of the left and right two most posterior mandibular teeth; the dorsum of the tongue, hard palate, left and right buccal mucosa and the floor of the mouth.

The swab was immediately placed into a sterile bottle containing 4 mL of Calgon-Ringer's solution to maintain the viability of microorganisms collected and stored on ice. Within 2 h of collection the swabs were transported, on ice, to the Paediatric Oral Microbiology Laboratory at the Eastman Dental Institute for processing.

Reproducibility

The caries-related microflora were collected using an alginate swab from 20 subjects without CRF. Each sample was divided into two, processed as two separate samples and inoculated onto both selective and non-selective media. Bacterial counts from each of the different media were obtained and compared.

Sample processing

Ten-fold serial dilutions were prepared in Fastidious Anaerobic Broth and 100 μL aliquots of the appropriate dilutions were inoculated onto selective and non-selective media.

Mitis Salivarius Agar (MSA) supplemented with 0·1% potassium tellurite was prepared for the total streptococcal count. The plates were incubated in an anaerobic chamber at 37 °C for 7 days. MSA supplemented with 0·1% potassium tellurite, bacitracin 0·2 units/mL and sucrose 15% w/v (BMSA) was prepared for the enumeration of *S. mutans* [30]. The plates were incubated anaerobically at 37 °C for 3 days. Rogosa agar was prepared for the enumeration of lactobacillus species and incubated anaerobically at 37 °C for 7 days. Sabouraud Dextrose agar was prepared for the enumeration of *Candida* species. The plates were incubated aerobically at 37 °C for 48 h. Fastidious Anaerobic Agar supplemented with 5% (v/v) defibrinated horse blood was prepared for total aerobic and anaerobic counts. The plates for aerobic counts were incubated at 37 °C for 3 days and the plates for anaerobic counts were incubated in an anaerobic chamber with an atmosphere consisting of 90% nitrogen, 5% hydrogen and 5% carbon dioxide at 37 °C for 7 days.

Identification of S. mutans

Preliminary identification of *S. mutans* was confirmed by Gram staining where bacteria appeared as Gram positive cocci. Two colonies were picked from the BMSA plates and inoculated into separate 3 mL volumes of Todd Hewitt broth and incubated aerobically for 24 h. Each broth was Gram stained and 50 μL was inoculated onto Columbia Blood Agar supplemented with 5% defibrinated horse blood to check for purity. Each broth culture was subjected to a series of carbohydrate fermentation tests, arginine and aesculin hydrolysis and enzyme hydrolysis tests [31,32].

Lactobacillus *species*

Lactobacillus species were identified by colonial morphology and Gram staining.

Candida *species*

Candida species were initially identified by Gram stain. *Candida albicans* was differentiated from other *Candida* spp. by the presence of fluorescence under ultra-violet light using a 4-methylumbelliferyl linked fluorogenic substrate, N-acetylgalactosaminide [33].

Statistical analysis

The data were tested for normality using the Shapiro-Wilks test [24] and found to be non-normal in distribution. Non-parametric statistical tests were used. The chi-square test was used for categorical data and the Mann–Whitney test for comparisons between the renal transplant and control groups.

Results

Twenty-four children undergoing renal transplantation and controls matched for age, gender, ethnicity and social class were included in the study. The mean

Table 1. Decayed, missing and filled surfaces and teeth for primary and permanent dentition: renal transplant and control groups (baseline).

	Renal transplant group			Control group			
	Mean ± SD	Median	Min–Max	Mean ± SD	Median	Min–Max	*P*-value
dmfs	0·3 ± 0·9	0	0–4	4·0 ± 7·7	0	0–29	0·03
dmft	0·3 ± 0·9	0	0–4	1·9 ± 3·4	0	0–12	0·03
DMFS	2·3 ± 5·3	0	0–24	4·4 ± 4·7	3	0–18	0·01
DMFT	1·5 ± 2·6	0	0–8	3·1 ± 3·0	2	0–11	0·02

age for the renal transplant children was 11·6 (SD 3·5) y and for the controls, 11·7 (SD 3·6) y. The primary diagnoses of the children were pyelonephritis/interstitial nephritis ($n = 5$), hereditary/familial nephropathy ($n = 6$), congenital hypoplasia/dysplasia ($n = 8$), multisystem disease ($n = 4$) and miscellaneous ($n = 1$). There were 15 males and nine females. Three children had previously had a kidney transplant and one other child, two transplants. Eight children received kidneys from live related donors and 16 others, from cadaveric donors. The mean blood levels for calcium, creatinine and urea were 2·4 ± 0·2, 699·3 ± 237·1 and 15·1 ± 4·6, respectively. For cases and controls the creatinine and urea levels were significantly lower 24/48 h post-transplantation 522·3 ± 251 ($P = 0{\cdot}0001$) and 12·5 ± 4·2 ($P = 0{\cdot}0001$) and 90 days post-transplantation, 104·1 ± 34·7 ($P = 0{\cdot}0001$) and 6·9 ± 2·7 ($P = 0{\cdot}0001$), respectively, compared with baseline. One child was being treated with penicillin V 250 mg daily at baseline. Sixteen children were treated with ciprofloxacin 5 mg/kg at operation and four times daily for 24 h post-transplantation. All the children were treated with septrin, 240–480 mg daily, from day 2 post-transplantation for 6 months. Seventeen children were receiving cyclosporin A and a further seven, tacrolimus (FK506). Nineteen children were treated with nifedipine. All the children were under treatment with oral prednisilone 90 days post-transplantation.

Dental indices and the caries related microflora were recorded for the renal transplant group on three separate occasions. These were at baseline, immediately before the transplant, 24/48 h and 90 days post-transplantation. Indices were recorded for the matched controls on two separate occasions 90 days apart.

Dental indices

Reproducibility of dental indices

Studies were completed to assess the reproducibility of recording indices of caries, bacterial dental plaque and gingival inflammation, and the Kappa value calculated. For caries, the Kappa value for interexaminer agreement was 0·91 and 0·96 for the intraexaminer agreement. For dental plaque, the Kappa value was 0·89 and for gingivitis 0·84. For gingival enlargement the Kappa value was 0·8.

This is substantial agreement for dental caries, dental plaque and gingivitis and good agreement for gingival enlargement (24).

Dental caries

A significantly greater proportion of children undergoing transplantation were caries free, 61%, compared with 8·3% for the controls, respectively (chi-square 17·42, d.f. 1, $P = 0{\cdot}0001$).

There was a significantly greater mean dmfs 4·0 ± 7·7 and dmft 1·9 ± 3·4 in the controls compared with the transplant children, 0·3 ± 0·9 ($P = 0{\cdot}03$) and 0·3 ± 0·9 ($P = 0{\cdot}03$) (Table 1). Both the DMFS, 4·4 ± 4·7 and DMFT, 3·1 ± 3·0 were also significantly greater in the controls compared with transplant group, 2·3 ± 5·3 ($P = 0{\cdot}01$) and 1·5 ± 2·6 ($P = 0{\cdot}02$), respectively (Table 1).

Dental plaque

There was no significant difference in the mean plaque score for either the primary or permanent dentition in the transplant children compared with the controls either at baseline or 90 days post-transplantation (Tables 2 and 3). There was a significantly greater mean plaque score for the permanent dentition only in the transplant children at baseline 14·7 ± 12, compared with 90 days post-transplantation, 9·4 ± 10·4 ($P = 0{\cdot}02$) (Tables 2 and 3).

Gingivitis

There was no significant difference in the gingivitis score for either the primary or permanent teeth between the transplant children and their controls either at baseline or 90 days post-transplantation (Tables 2 and 3). There was no significant difference in the

Table 2. Dental plaque and gingivitis scores and gingival enlargement score and index at baseline: renal transplant and control groups.

	Renal transplant			Control group			
Variables	Mean ± SD	Median	Min–Max	Mean ± SD	Median	Min–Max	*P*-value
Primary teeth							
Plaque score	4·1 ± 8·4	0	0–28	2·3 ± 5·6	0	0–26	ns
Gingivitis score	3·0 ± 6·7	0	0–28	2·2 ± 4·1	0	0–16	ns
Gingival enlargement score	0	0	0	0	0	0	ns
Gingival enlargement index	0	0	0	0	0	0	ns
Permanent teeth							
Plaque score	14·7 ± 12	11	0–49	15·7 ± 13·7	13·5	0–53	ns
Gingivitis score	8·5 ± 10·9	7	0–48	10·3 ± 10·9	5·5	0–36	ns
Gingival enlargement score	0·5 ± 1·4	0	0–6	0	0	0	ns
Gingival enlargement index	2·1 ± 5·6	0	0–25	0	0	0	ns

ns, not significant.

Table 3. Dental plaque and gingivitis scores and gingival enlargement score and index at end of study: renal transplant and control groups

	Renal transplant group			Control group			
Variables	Mean ± SD	Median	Min–Max	Mean ± SD	Median	Min–Max	*P*-value
Primary teeth							
Plaque score	3·5 ± 6·7	0	0–22	2·2 ± 4·9	0	0–22	ns
Gingivitis score	2·4 ± 5	0	0–16	1·9 ± 3·4	0	0–12	ns
Gingival enlargement score	0	0	0	0	0	0	ns
Gingival enlargement index	0	0	0	0	0	0	ns
Permanent teeth							
Plaque score	9·4 ± 10·4	6	0–50	15·2 ± 12·8	12·5	0–50	ns
Gingivitis score	7·7 ± 5·8	6	0–22	10 ± 6·7	9·5	0–24	ns
Gingival enlargement score	1·8 ± 5·2	0	0–24	00	0	0	0·04
Gingival enlargement index	7·6 ± 21·6	0	0–100	00	0	0	0·04

ns, not significant.

gingivitis score between baseline, 24–48 h and 90 days post-transplantation.

Gingival enlargement

Gingival enlargement was detected in four transplant children at baseline and in five children at 90 days post-transplantation. There was no significant difference in the mean gingival enlargement score or index at baseline between the transplant and controls groups (Table 2). Significantly greater gingival enlargement score (1·8 ± 5·2) and index (7·6 ± 21·6) were observed in the transplant group 90 days post-transplantation compared with baseline ($P = 0{\cdot}04$) and also compared with the controls after 90 days ($P = 0{\cdot}04$) (Tables 2 and 3).

There was no significant association between gingival enlargement and the plaque and gingivitis scores.

Caries-related microflora

In the control group, there was no significant difference in the total aerobic and anaerobic counts between baseline and 90 days. There was no significant difference in the isolation frequency, bacterial counts or proportion of *S. mutans*, *Lactobacillus* species or *C. albicans* as a percentage of the total anaerobic count between baseline and 90 days later (Tables 4–6).

There was a significantly greater isolation frequency of *S. mutans* both at baseline ($P = 0{\cdot}0001$) and 90 days post-transplantation ($P = 0{\cdot}0001$) (Table 4). In the renal transplant group, the isolation frequency of *S. mutans* was significantly greater 90 days post-transplantation compared with baseline ($P = 0{\cdot}04$). The *S. mutans* count was significantly lower both at baseline ($P = 0{\cdot}0001$) and 90 days post-transplantation ($P = 0{\cdot}02$) (Tables 5 and 6) in the transplant children compared with the controls.

The isolation frequency of *Lactobacillus* species was significantly lower in the renal transplant children compared with controls both at baseline ($P = 0{\cdot}0001$) and 90 days post-transplantation ($P = 0{\cdot}004$). The *Lactobacillus* species count was also significantly lower in the transplant children compared with the controls both at baseline (Table 5) ($P = 0{\cdot}004$) and 90 days later ($P = 0{\cdot}05$) (Table 6). The isolation

Table 4. Isolation frequency (%) of caries-related microflora at baseline and 90 days post-transplantation: renal transplant and control groups.

	Baseline (%)			90 days later (%)		
Species	Transplant group	Control group	*P*-value	Transplant group	Control group	*P*-value
S. mutans	8·3	79	0·0001	41·7	83	0.0001
Lactobacillus species	16	54	0·0001	21	50	0.004
C. albicans	4·2	38	0·0001	13	38	0.0001

ns, not significant.

Table 5. Caries-related microflora ($\log_{10}$) at baseline: renal transplant and control groups.

	Renal transplant group			Control group			
Species	Mean ± SD	Median	Min–Max	Mean ± SD	Median	Min–Max	*P*-value
S. mutans	0·7 ± 1·7	0	0–5·4	3·5 ± 2·0	3·7	0–6·9	0·0001
Lactobacillus species	0·4 ± 0·9	0	0–2·7	1·6 ± 1·6	1·8	0–4·3	0·004
C. albicans	0·7 ± 0·3	0	0–1·6	1·2 ± 1·5	0	0–3·5	0·004
Total aerobic count	7·7 ± 0·5	7·9	6·9–8·4	7·6 ± 0·4	7·4	7·1–8·5	ns
Total anaerobic count	7·9 ± 0·5	8·0	7·0–8·5	7·7 ± 0·4	7·6	7·1–8·4	ns

ns, not significant.

Table 6 Caries-related microflora ($\log_{10}$) at end of study: renal transplant and control groups.

	Renal transplant group			Control group			
Species	Mean ± SD	Median	Min–Max	Mean ± SD	Median	Min–Max	*P*-value
S. mutans	1·8 ± 2·0	1·0	0–5·6	3·3 ± 2·0	3·8	0–7·0	0·02
Lactobacillus species	0·7 ± 1·4	0	0–4·0	1·6 ± 1·7	1·1	0–4·2	0·05
C. albicans	0·4 ± 0·9	0	0–2·9	1·1 ± 1·5	0	0–3·7	ns
Total aerobic count	7·7 ± 0·4	7·5	7·2–8·6	7·6 ± 0·4	7·6	7·2–8·5	ns
Total anaerobic count	7·8 ± 0·5	7·9	7·3–7·9	7·7 ± 0·4	7·6	7·0–8·4	ns

ns, not significant.

frequency of *C. albicans* was significantly less in the transplant children compared with the controls both at baseline ($P = 0{\cdot}0001$) and 90 days post-transplantation ($P = 0{\cdot}004$) (Table 4). The counts of *C. albicans* were significantly less in the transplant children compared with controls at baseline only ($P = 0{\cdot}004$).

Discussion

The effect of cyclosporin A and nifedipine on the development of gingival enlargement is well documented in both children and adults undergoing solid organ transplantation. There are, however, few data for dental caries in children undergoing renal transplantation.

All the children in this investigation were in chronic renal failure prior to transplantation and the low prevalence of dental caries was in agreement with earlier work with similar groups of children [5–7].

It is well established that *S. mutans* has an important role in the initiation and progression of dental caries [34,35]. Although the total count of *S. mutans* was significantly lower in the transplant children compared with the controls both at the beginning and end of the study, the isolation frequency had significantly increased in the transplant children at the end of the study. If the relationship between *S. mutans* and caries were simple and direct it could be anticipated that the prevalence of dental caries 12–18 months post-transplantation would be approaching that of the controls. *C. albicans* was isolated from the saliva of both the transplant and control children and although *Candida* species do not have an active role in the caries process, the presence of *Candida* has been suggested as an indicator of caries risk [36].

The four children with gingival enlargement at baseline had been treated with both nifedipine and cyclosporin A following an earlier transplant. The prevalence of gingival enlargement has been found to be greater following the combination of these two drugs [37,38]. The development of gingival enlargement is associated with increased plaque accumulation [18] but there was no difference in the plaque score between the renal transplant children and the controls at the end of the study. Others workers have reported that blood cyclosporin concentration was the primary factor influencing gingival enlargement followed by increased plaque and gingivitis levels [39]. Different investigators demonstrated a positive correlation between gingival enlargement and the cyclosporin dose during the first 6 months of treatment [17]. The children in the current investigation were treated with cyclosporin microemulsion which gives a more sustained blood concentration than the original macroemulsion. It is possible that this would increase the tendency towards gingival overgrowth following the early transplantation period. Tacrolimus is reported to have fewer side-effects on the gingival tissues [40,41] and none of the children treated with tacrolimus were found to have gingival enlargement.

Conclusions

A significantly smaller proportion of children undergoing renal transplantation were found to have dental caries experience compared with the control group. Although gingival enlargement was observed in only five of the children 90 days post-transplantation it is a problem which increases in frequency and severity with time. In many children, the unsightly gingival enlargement leads to a request for extensive gingival recontouring. It is important that these children receive intensive oral hygiene instruction to ensure effective plaque control to minimize the oral effects of both cyclosporin and nifedipine.

Résumé. Il y a peu d'information sur la santé buccale des enfants bénéficiant d'une transplantation rénale durant la période post-implantaire proche.
Méthodes. Vingt-quatre enfants bénéficiant d'une transplantation rénale, âgés de 4 à 13,2 ans, ainsi que des enfants témoins appariés ont été recrutés. Les caos, caod, CAOS et CAOD, les scores de plaque, gingivite et accroissement gingival ont été notés. La flore buccale a été prélevée et cultivée pour le suivi de *S. mutans*, des espèces de Lactobacilles et de *Candida*.
Résultats. Les indices moyens caos (0,3 ± 0,9; p = 0,03), caod (0,3 ± 0,9; p = 0,03), CAOS (2,3 ± 5,3; p = 0,01) et CAOD (1,5 ± 2,6; p = 0,02) étaient significativement plus bas chez les enfants transplantés. L'indice moyen de plaque en denture permanente était significativement plus élevé au début (14,7 ± 11) qu'à 90 jours post-transplantation (9,4 ± 10,4; p = 0,02). LE score d'accroissement gingival était statistiquement plus élevé à 90 jours post-transplantation (1,8 ± 1,4; p = 0,04) qu'au début. Les comptes de *S. mutans* et de lactobacilles étaient significativement plus bas au début (p = 0,0001 et p = 0,004) et à 90 jours post-transplantation (p = 0,02; et p = 0,05) par rapport à ceux des enfants témoins.
Conclusion. Les enfants transplantés présentent moins de maladies dentaires actives que les témoins bien que l'accroissement gingival nécessite un suivi particulier.

Zusammenfassung. Es gibt nur wenig Information über die Mundgesundheit von nierentransplantierten Kindern während der Zeit früh nach der Transplantation.
Methoden. Vierundzwanzig nierentransplantierte Kinder im Alter von 4-13.2 Jahren wurden mit gematchten Kontrollen verglichen. Es wurden folgende Daten festgehalten: dmfs, dmft, DMFS, DMFT, Plaque, Gingivitis sowie Gingivavergrößerung. Die orale Mikroflora wurde untersucht durch Probenentnahme und Anlage von Selektivkulturen für S. Mutans, Laktobazillen und Candida.
Ergebnisse. Es zeigten sich jeweils signifikant niedrigere mittlere dmfs (0.3 ± 0.9; p = 0.03) dmft (0.3 ± 0.9; p = 0.03) DMFS (2.3 ± 5.3; p = 0.01) und DMFT (1.5 ± 2.6; p = 0.02) in der Transplantatgruppe. Der mittlere Plaquescore war für die bleibenden Zähne zum Zeitpunkt der Baselineuntersuchung signifikant größer (14.7 ± 11) im Vergleich zur Untersuchung nach 90 Tagen (9.4 ± 10.4; p = 0.02). Es lag nach 90 Tagen ein signifikant größerer Gingivavergrößerungsscore (1.8 ± 1.4 ; p = 0.04) vor als zum Ausgangszeitpunkt. Die Zahlen von S. mutans und Laktobazillen lagen zur Baseline (p = 0.0001; p = 0.0002) und nach 90 Tagen (p = 0.02; p = 0.04) niedriger als bei den Kontrollen.
Schlussfolgerungen. Die transplantierten Kinder hatten weniger Karies als die Kontrollen, allerdings besteht die Erfordernis des Monitoring der Gingivavergrößerung.

Resumen. Hay poca información sobre la salud oral en niños con trasplante renal durante el periodo temprano del trasplante.
Métodos. Se reclutaron 24 niños sometidos a trasplante renal entre 4-13,2 años y sus pares control. Se registraron los índices caos, caod, CAOS y CAOD, placa, gingivitis y agrandamiento gingival. Se recogió una muestra de la microflora oral y se hicieron cultivos para S. Mutans, especies de Lactobacilos y especies de Cándidas.

Resultados. Hubo una media significativamente menor en el grupo trasplantado en los índices caos (0,3 ± 0,9; $p = 0{,}03$), caod (0,3 ± 0,9; $p = 0{,}03$), CAOS (2,3 ± 5,3; $p = 0{,}01$) y CAOD (1,5 ± 2,6; $p = 0{,}02$). Hubo un índice medio de placa significativamente mayor (14,7 ± 11) para la dentición permanente basal comparada con la de 90 días post-trasplante (9,4 ± 10,4; $p = 0{,}02$). Hubo un mayor índice de agrandamiento gingival (1,8 ± 1,4; $p = 0{,}04$) a los 90 días post-trasplante comparado con el basal.

Los recuentos de S mutans y lactobacilos fueron significativamente menores tanto basales ($p = 0{,}0001$ y $p = 0{,}004$) como a los 90 días post-trasplante ($p = 0{,}02$ y $p = 0{,}05$), respectivamente comparados con los controles.

Conclusiones. Los niños trasplantados tienen menos enfermedad dental activa que los controles aunque el agrandamiento gingival necesita una monitorización cuidadosa.

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