Supportive xerostomia treatment with edible oral gel in dialysis patients

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Objectives:
A biopolymer based experimental oral hygiene gel contributed to optimal toothbrushing (Flad et al. 2016) and plaque control (Gaengler et al. 2016). Because of long bioavailability at the oropharyngeal mucosa and a low pH of 4.2, the reduction of xerostomia was expected. Therefore, it was the aim to assess (i) the reduction of dry-mouth symptomatology in dialysis patients, (ii) the improving of plaque control and (iii) the reduction of the number of gingivitis teeth.

Material and Methods:
After ethical approval (EK UWH 103/2019) 44 patients (18 female, 26 male, age 30 - 85 y) with chronic renal failure (43 haemodialysis, 1 peritoneal dialysis) were randomized in 2 groups for 28 days. Inclusion criterion was saliometric flow rate <0.5 ml/min. Verum Group used edible oral gel containing chitosan and fluoride 2 x 2 minutes/day with a multifunctional toothbrush, and the Control Group used the individual toothbrush and dentifrice for the same time. Instruction and clinical assessment took place at baseline, after 14 d and 28 d: Medical/ dental status, Plaque Index (Silness/Loe), DMFS, Gingivitis Teeth GPM/T (Gaengler), Denture Hygiene Index (Wefers), White Tongue (Grade 0-3) and OHIP-14 (German version). Most important was the dry-mouth assessment during dialysis and -in-between usually 2x/week in 4 Grades (0 - never, 1 - sometimes, 2 - moderate, 3 - severe, 4 - permanent). All data underwent statistical analysis for normal distribution (Kolmogorov-Smirnov-test), t-Test for homogenous variances, non-parametric WMW-U-test and Chi-Quadrat test using SPSS vers. 26. At baseline no significant differences between the two groups existed.

Results:
Compliance of subjects at dialysis periods and -in-between was high. Xerostomia in Verum Group was reduced from baseline to 28 d: Medical/dental status, Plaque Index (Silness/Loe), DMFS, Gingivitis Teeth GPM/T (Gaengler), Denture Hygiene Index (Wefers), White Tongue (Grade 0-3) and OHIP-14 (German version). Most important was the dry-mouth assessment during dialysis and -in-between usually 2x/week in 4 Grades (0 - never, 1 - sometimes, 2 - moderate, 3 - severe, 4 - permanent). All data underwent statistical analysis for normal distribution (Kolmogorov-Smirnov-test), t-Test for homogenous variances, non-parametric WMW-U-test and Chi-Quadrat test using SPSS vers. 26. At baseline no significant differences between the two groups existed.

Conclusions:
The viscous oral gel coating of the oropharyngeal mucosa with extended bioavailability contributed to highly significant (p<0.001) reduction of xerostomia, plaque accumulation and number of gingivitis teeth per subject. High compliance and the mechanism of action - MOA - in reducing dry-mouth complaints resulted in 20/1 (n = 21) claims to use the gel and the nursing multifunctional toothbrush in the future. Even in terminally ill patients, dentist’s supervision of oral hygiene gel improves Oral-Health related Quality of Life (OHIP).

References:
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