Reviewer's report

Title: Longitudinal study of dental caries incidence associated with Streptococcus mutans and Streptococcus sobrinus in patients with intellectual disabilities

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Reviewer: Georg Conrads

Reviewer's report:

In their manuscript entitled „Longitudinal study of dental caries incidence associated with Streptococcus mutans and Streptococcus sobrinus in patients with intellectual disabilities” Oda et al. investigate the prevalence and incidence of two cariogenic species, Streptococcus mutans and S. sobrinus in 145 mentally disabled young individuals (age 6-30) applying end-point PCR

Major Compulsory points

The study population is quite interesting but their mental handicaps are not specified or “quantified”. They were followed longitudinally over one year in their caries and caries-agent quantities but the method applied (end-point PCR) is a kind of obsolete. The English language needs improvement.

Minor Essential points

Background line 4: the term “pathogen” for mutans-streptococci is obsolete or –at least- needs some modification or reduction. I recommend to use “putative pathogen (or parasitic symbiont according to the extended ecological plaque hypothesis [please cite Takahashi & Nyvad 2011])”.

Line 10-11: please correct and cut, I recommend “as they have been shown to be capable of detecting low numbers (5-100) of bacterial cells”

Line 24: should read “these two species and caries activity in children…”

Methods, line 2: Please provide how your ID subjects were chosen/scored as being intellectual disabled. How many had down-syndrome etc. Provide a table with a few clinical entities and numbers of patients. Very important!

Line 2: “old” is redundant.

Line 13-14: Please give further details of the method for sampling; did they brush with a “dry” toothbrush or was any liquid used; the reference cited is subjecting periodontopathogens (subgingival bacteria). Hard to believe that the protocols can be transferred 1:1 for the collection of supragingival samples.

Lines 20ff: please use forward and reversed instead of upper and lower and “complementary” instead of “complimentary” (very different meaning). Please provide a sentence about the principal target of these species specific PCRs (dextranase gene).

Page 6, line 2ff: please give the ratio for the A. actinomycetemcomitans-directed
PCR; this was done for proofing absence of PCR inhibiting substances (and principal presence of bacteria, proof that the brushes were used. It is a bacteria-universal PCR with A.a. as a reference target only. This must be explained to the reader. Again, complementary and forward, reversed must be used.

Results, line 7: “at after 1 year” redundant preposition

Lines 12-13 (and later page 10, line 19 as well as page 11 line 14 and end of discussion, Table 2): “increases in caries increment” seems to be redundant; is this phrase really in use or do you mean increase in caries prevalence which is “incidence”. You are using the correct terms in your title. Please reconsider phrasing.

Discussion, line 13ff: “To detect S. mutans and S. sobrinus in the present subjects, we performed PCR assays with eubacterial 16S rRNA-based primers using dental plaque samples obtained by a toothbrushing method, which confirmed the presence of bacterial DNA in all plaque samples (data not shown).” This sentence is unclear. I recommend “To ensure presence of a representative bacterial sample in all cases and absence of PCR inhibiting substances we performed a broad-range PCR assays applying eubacterial 16S rRNA-based primers and subjecting all samples obtained by the toothbrushing method. This confirmed the presence of bacteria and bacterial DNA in all plaque samples (data not shown).”

Line 18ff: the sensitivity testing method has to move to the M&M section.

Lines 23-line 2 next page: results are repeated which should be avoided.

Final comments:

After a major revision this article could be appropriate for publishing in BMC Oral Health; however the authors should establish real-time quantitative PCR for future studies. This reviewer wonders why in all studies of this particular group (and in contrast to almost all other studies worldwide) the prevalence of S. sobrinus (with or without S. mutans) is so high. For studying the synergistic potential of both species this reviewer recommends to read a recent review published in Journal of Oral Microbiology comparing both species on whole genome level.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
no competing interests