Differences in acid-tolerant bacteria and C. albicans in children

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Objective:
Recent studies have suggested a role for acid tolerant bacterial strains, as well as a role for Candida albicans in the development of early childhood caries (ECC). The purpose of this study was to compare the recoveries of: 1) mutans streptococci (MS), 2) C. albicans, and 3) acid-tolerant strains between toddlers with caries and age and gender matched caries-free toddlers, and to evaluate the data both collectively individually. These measures have been found to become evident/elevated 12 to 18 months before a caries diagnosis.

Methods:
Twenty-four subjects under 48 months of age were recruited. Dental plaque samples were collected with a sterile cotton-tipped applicator over the coronal surfaces. Plaque samples were cultured on Anaerobic Blood Agar for determination of the total cultivable count, on SB20 agar for the quantification of MS, on CHROMagar Candida for the quantification of Candida species, and on Acid Agar (pH 5.0) for the quantification of acid tolerant strains. Data analysis was completed using two-sample t-test to compare samples between the groups with and without caries.

Results:
Collectively, children with caries had higher proportions of C. albicans, and statistically higher ($p<0.05$) levels of MS and acid-tolerant strains than did children without caries. At the individual level, all 12 toddlers with caries had detectable Candida, MS at ≥ 0.01% of the total count, and/or an acid tolerant recovery of ≥ 1% of the total count, whereas only 5 of 12 caries-free subjects met at least one of these criteria.

Conclusion:
Current caries risk assessment is better at predicting future health than future caries. A focus on multiple microbiological measures may improve the sensitivity of caries risk assessment.