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Dental caries prevalence and severity positively associate with AMY1 gene copy number

Rubi Mauricio-Castillo [1], Andres Valdevit [2], Laura Gonzalez-Davalos [3], Rubén Abraham Dominguez-Perez [4], Pablo Garcia-Solis [2], Olivia Vazquez-Martinez [3], Hebert Luis Hernandez-Montiel [2], Juan Carlos Solis-Sainz [5]

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Abstract

Objective: To establish the possible relation between total caries (TC) and caries severity (CS) with the AMY1 gene copy number (AMY1GCN).

Materials and methods: This was an observational, cross-sectional, population-based, and association study with 303 participants. Each participant underwent a complete anamnesis and stomatological check-up, and peripheral blood was obtained to extract gDNA. TC and CS were determined as the number of caries at the dental exploration and the number of dental surfaces affected by caries, respectively, and AMY1GCN was determined by qPCR.

Results: We found an elevated caries prevalence (92.7%); TC and CS were 8 ± 10 and 10 ± 13 (median ± IR). There were higher TC and CS in those participants with AMY1GCN above the mean value (0.02 and 0.01 p values, respectively). A positive correlation between TC and CS with AMY1GCN (0.11 and 0.125 r values, 0.03 and 0.01 p values, respectively) was found, in addition to an association between TC and CS with AMY1GCN (1.5 and 1.6 OR values, 0.48 and 0.26 p values, respectively).

Conclusion: TC and CS were positively related to the AMY1GCN.

Clinical relevance: Dental caries has a high prevalence and a multifactorial etiology and has been related to a genetic component. Indeed, the salivary enzyme alpha-amylase could play a significant role in caries susceptibility, considering that its codifying gene (AMY1) can show variation in its gene

copy number. This can be considered an important factor for the development of caries at a genetic level.

Keywords: AMY1 gene copy number; Copy number variation; Total caries, Caries severity.

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