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**EVOLIUCINĖ MEDICINA:
ŽMOGAUS RAIDOS PERSPEKTYVOS IR SVEIKATA
BESIKEIČIANČIOJE APLINKOJE**

**EVOLUTIONARY MEDICINE:
PERSPECTIVES ON HUMAN DEVELOPMENT AND HEALTH
CONSEQUENCES IN A CHANGING ENVIRONMENT**

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Vilniaus universiteto Medicinos ir sveikatos mokslų
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ASSOCIATION BETWEEN MPPED2 GENE POLYMORPHISM AND PERIODONTAL POCKETS IN ADULTS WITH INTELLECTUAL DISABILITIES

Karole Simona MOTIEJUNAITE^{1,2}, Indre STANKEVICIENE¹, Kristina DANIUNAITE², Alina PURIENE¹

¹Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

²Institute of Biosciences, Life Sciences Center, Vilnius University, Vilnius, Lithuania

Contact e-mail: karole.motiejunaite@mf.stud.vu.lt

Background and Aim: Individuals with intellectual disabilities have poor periodontal health. The influence of genetic factors is unknown. The aim is to evaluate the association between MPPED2 gene polymorphism rs11031093 (G>A) and proportion of teeth with periodontal pockets in adults with intellectual disabilities.

Materials and Methods: A cross-sectional convenience sample study was carried out following Bioethics Committee's approval (No.2019/10-1162-652), acquisition of caregivers' written informed consents. Study included adults treated 2023-2025 under general anaesthesia at Vilnius University Hospital SK, Žalgiris Clinic. Sociodemographic data (age, gender) were collected using WHO Adult Oral Health Questionnaire (2013), Lithuanian version. Periodontal pockets were assessed using WHO (2013) criteria by calibrated examiner, then expressed as percentages of teeth with ≥ 4 mm and ≥ 6 mm probing depth periodontal pockets relative to the number of teeth present. Swab samples were collected by the same examiner. After isolation of DNA from them (automated magnetic bead-based extraction system), genotyping was carried out by qPCR. Statistical analysis was performed using Shapiro-Wilk, Chi-square, Kruskal-Wallis, and Dunn's post-hoc tests. $p < 0.05$ was considered significant.

Results: Study included 60 adults with intellectual disabilities (mean age($\pm$ SD)31 $\pm$ 8 years), 36 male (60.0%). The distribution of MPPED2 genotypes was GG-61.7%(n=37), GA-33.3%(n=20), AA-8.3%(n=5), which was comparable with European population's frequencies (GG-50.9%, GA-40.8%, AA-8.4%), $p=0.36$. The average proportion of teeth with ≥ 4 mm periodontal pockets ($\pm$ SD) was 27,8% ($\pm$ 31,6), while 7.6% ($\pm$ 17.0) of teeth had ≥ 6 mm periodontal pockets. The percentage of ≥ 6 mm periodontal pockets differed significantly among MPPED2(rs11031093) genotype groups ($p=0.003$), with the highest values observed in GA group (14.2 $\pm$ 22.3%) compared with GG (4.3 $\pm$ 13.6%) and AA (4.1 $\pm$ 5.6%). Post-hoc Dunn analysis showed significantly higher values in GA group compared with GG group($p=0.002$). No significant differences were observed for ≥ 4 mm periodontal pockets.

Conclusions: MPPED2 genotype was significantly associated with percentage of ≥ 6 mm periodontal pockets, with the GA genotype showing higher values than GG genotype. However, further studies with larger sample size are needed to confirm these findings and clarify the potential role of MPPED2 in periodontal disease severity.

Keywords: intellectual disabilities, MPPED2 polymorphism, periodontitis