

Polymorphisms in genes encoding purinoreceptor, osteoprotegerin and external apical root resorption in children after orthodontic treatment

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Orthodontically induced external apical root resorption (EARR) is a multifactorial inflammatory disease. Genes encoding proteins which are involved in the modulation of inflammatory response and bone remodeling are considered as the “candidate” for EARR. The aim of this study was to analyze possible associations of single nucleotide polymorphisms (SNPs) in the *P2RX7* (encoding purinoreceptor) and *TNFRSF11B* (encoding osteoprotegerin) genes with EARR in Czech children after orthodontic treatment. A total, 99 orthodontically treated patients (69 healthy and 30 with EARR) were enrolled in this case-control study. Genotype determination of *P2RX7*+489C/T (rs208294, Tyr155His) and +1068C/T (rs1718119, Thr348Ala), *TNFRSF11B* -163C/T (rs3102735) and *TNFRSF11B*+1181C/G (rs2073618, Lys3Asn) was based on polymerase chain reaction using 5' nuclease TaqMan® assays. While no significant differences were observed in allele or genotype frequencies of all four studied SNPs, specific combinations of variants in *P2RX7* may be associated with lower/higher risk of EARR development ($P < 0.05$). In addition, the length of treatment by orthodontic appliances positively correlated with the presence of EARR ($P < 0.05$). Although the effect of *P2RX7* SNPs themselves to the development of EARR was not confirmed in the Czech population, haplotype analysis suggests that variability in the *P2RX7* gene as well as the length of treatment may be important factors contributing to the etiopathogenesis of post-orthodontic EARR.

Biography

Zuzana Vrankova has just finished her fourth year of Dental Medicine at the Faculty of Medicine, Masaryk University in Brno - one of the top ranked universities in the Czech Republic. In the next academic year she is going to participate in the Erasmus program and study at University Tor Vergata in Rome, Italy. She is a determined student, and is very keen on attending various lectures, workshops as well as dedicating her free time to research work.

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