MATRIX METALLOPROTEINASES IN ORAL DISEASES (WITH ACCENT ON MATRIX METALLOPROTEINASE-1 IN CHRONIC PERIAPICAL LESIONS)

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Abstract

Matrix metalloproteinases (MMPs) are zinc and calcium dependent enzymes capable of degrading almost all extracellular matrix and basement membrane components. This group of proteolytic enzymes believed to be implicated in the breakdown of extracellular matrix in normal physiological processes, as well as, plays an important role in many destructive pathological oral processes, such as periodontal tissue destruction, root caries, tumor invasion, and chronic periapical inflammation (CPL). The aim of this study was to analyze polymorphism in the gene MMP-1 and their association and influence on clinical manifestation of chronic periapical lesions in order to provide new advances regarding the involvement of MMPs in various oral diseases associated with the inflammatory process.

A total of 240 unrelated Macedonian subjects were included in the present study. Polymorphism -1607 1G/2G in the gene MMP-1 detected with restriction enzymes AluI, XmnI and polymorphism -519 A/G in the gene MMP-1 detected with restriction enzyme KpnI was study in 120 patients with CPL and 120 controls without any signs of chronic or acute inflammatory process in the jaw. The amplification of the region of selected gene was made with polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP).

Our results showed that there was a differences in the allele and genotype frequencies of the MMP-1 polymorphism between patients with CPL and controls ($p<0.05$). Also this study suggests that MMP-1 polymorphism -1607 1G/2G detected with restriction enzymes AluI, XmnI was a risk for expression of CPL ($OR = 18.38 < 4.06 < OR < 115.46$; $OR = 7.73 < 3.1 < OR < 19.55$) and MMP-1 polymorphism -519 A/G detected with restriction enzyme KpnI was a risk for expression of CPL ($OR = 12.11 < 4.64 < OR < 32.30$).

Detection of this genetic polymorphism is relevant for obtaining providential treatment of patients who are at high risk of chronic periapical inflammation.

***Key words**: Matrix metalloproteinases, Oral diseases, Polymerase chain reaction, Gene mutation.*