

endodontske terapije životinje iz skupine 1 primale su doksiciklin (10 mg/kg, Hiramycin[®], Pliva d.d., Zagreb, Hrvatska) tijekom 12 dana. Sve životinje su žrtvovane 35. dana nakon endodontske terapije, te su čeljusti uklopljene u metil-metakrilat. Nedemineralizirani rezovi debeli 5 µm obojeni su Toluidinskim modrilom. Histomorfometrijski indeksi (površina osteoida, debljina osteoida, osteoklastni indeks i broj upalnih stanica) mjereni su svjetlosnim mikroskopom služeći se računalnim programom (ISSA, Vams, Zagreb, Hrvatska).

Vrijednosti debljine osteoida (skupina 1: 15,33 µm ± 33,49; skupina 2: 15,62 µm ± 7,41; p > 0,05) i broja upalnih stanica (group 1: 117,16 ± 38,66; group 2: 111,39 ± 75,81; p > 0,05) nisu pokazale statistički znatne razlike između skupina. Razlika između skupina statistički je bila znatna između mjerenih vrijednosti površine osteoida i osteoklastnog indeksa. Površina osteoida veća je u skupini 1 (skupina 1: 30,56% ± 15,51; skupina 2: 10,34% ± 11,60; p < 0,0001). Osteoklastni je indeks niži u skupini 1 (skupina 1: 43,13 mm - 2 ± 41,25; skupina 2: 111,34 mm - 2 ± 115,46; p < 0,001). Za statističke raščlambe uporabljen je Mann-Whitney U test.

Ne postoji razlika u debljini osteoida i broju upalnih stanica među skupinama. Površina osteoida je veća, a osteoklastni indeks je manji u skupini 1 (antibiotska skupina), što upozorava na veći potencijal koštanoga cijeljenja.

Doxycycline Influence on Bone Remodelling after Therapy of Periapical Lesions

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The aim of the study was to evaluate bone remodelling after endodontic therapy of periapical lesions combined with doxycycline administration by measuring osteoid surface, osteoid thickness, osteoclast index and inflammatory cell count in comparison with bone remodelling after endodontic therapy without antibiotic administration in dogs.

The experiment was conducted on six mongrel dogs. Endodontic therapy was performed 35 days after artificial dental pulp exposure. A total of 30 roots were cleaned and shaped by Crown-down technique with Profile[®] rotary instruments and filled with Thermafill[®] at the length to the apical delta confirmed radiographically. Cavities were sealed with amalgam. Animals were then divided into group 1 (antibiotic, three animals with 21 roots) and group 2 (non-antibiotic, three animals with 17 roots). Immediately after endodontic therapy, animals in group 1 were treated by administration of doxycycline (10 mg/kg, Hiramycin, Pliva d.d., Zagreb, Croatia) for a period of 12 days. All animals were sacrificed 35 days after endodontic therapy and mandibles embedded in methyl-metacrylate. Undemineralized sections 5 µm thick were stained with toluidine blue. The histomorphometric indices (osteoid surface, osteoid thickness, osteoclast index and inflammatory cell count) were measured by light microscopy using computer program (ISSA, Vams, Zagreb, Croatia).

Osteoid thickness (group 1: 15.33 µm ± 33.49; group 2: 15.62 µm ± 7.41; p > 0.05) and inflammatory cell count (group 1: 117.16 ± 38.66; group 2: 111.39 ± 75.81; p > 0.05) did not show statistically significant difference. The difference between groups was statistically significant in measured indices of osteoid surface and osteoclast index. Osteoid surface was greater in group 1 (group 1: 30.56 ± 15.51; group 2: 10.34% ± 11.60; p < 0.0001). Osteoclast index was lower in group 1 (group 1: 43.13 mm - 2 ± 41.25; group 2: 111.34 mm - 2 ± 115.46; p < 0.0001). Statistical analysis was performed using Mann-Whitney U test.

There was no difference in osteoid thickness and inflammatory cell count between the two groups. Osteoid surface was higher and osteoclast index lower in group 1 (antibiotic treated group) which indicates greater bone tissue healing potential.