Ekspresi kolagen tipe 1 pada tulang alveolar pascaterapi regeneratif dengan rgd-modified chitosan scaffold pada macaca nemestrina = Expression of collagen type i in alveolar bone after regenerative therapy with cell sheet and rgd-modified chitosan scaffold in macaca nemestrina

Virginia Nomida, author

Abstrak

ABSTRACT
Latar Belakang: Kerusakan tulang alveolar horizontal merupakan defek tulang yang umum ditemukan dalam kasus periodontal, namun belum dapat direkontruksi secara optimal. Kemanfaatan Background: sebagai bahan regeneratif pada defek tersebut telah dilaporkan secara klinis dan radiografis, namun evaluasi secara histologis belum banyak dilakukan. Adanya ekspresi kolagen tipe I pada jaringan periodontal merupakan salah satu indikator keberhasilan terapi regeneratif.
Tujuan: Mengevaluasi efektivitas chitosan dan RGD-modified chitosan dalam meningkatkan ekspresi kolagen tipe I secara histologis pada terapi regeneratif dengan pola kerusakan tulang horizontal.
Metode dan Bahan: Sampel adalah sediaan biologis tersimpan berupa jaringan periodontal regio gigi insisivus lateral Macaca nemestrina setelah 4 minggu terapi regeneratif dengan chitosan dan RGD-modified chitosan scaffold. Ekspresi kolagen tipe I dievaluasi dengan imunohistokimia menggunakan antibodi primer COL1A1. Perbedaan area pewarnaan positif dan intensitas warna kolagen tipe I dianalisis dengan metode grid pada ImageJ serta uji statistik menggunakan uji Mann-Whitney. Kelompok penelitian dibagi menjadi dua, yaitu kelompok chitosan dan kelompok RGD-modified chitosan. Hasil: Median area pewarnaan positif chitosan 61,53(46,64-77,67), lebih besar dari RGD-modified chitosan 25,69(17,94-35,20) namun tidak berbeda bermakna secara statistik(p>0,05). Median intensitas pewarnaan lemah 35,40(26,23-50,34), sedang 24,48(3,25-34,95) dan kuat 3,16(0,34-11,65) area pewarnaan positif kelompok chitosan lebih besar dari kelompok RGD-modified chitosan, namun tidak berbeda bermakna secara statistik. Simpulan: Terapi chitosan scaffold dan RGD-modified chitosan berpotensi meregenerasi jaringan periodontal dengan pola kerusakan tulang horizontal. Penambahan RGD pada scaffold tidak memiliki pengaruh terhadap ekspresi kolagen tipe I.
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ABSTRACT
Horizontal alveolar bone damage is a common bone defect found in periodontal cases, but cannot be reconstructed optimally. The usefulness of the use of chitosan and RGD-modified chitosan scaffold as a regenerative material in the defect has been reported clinically and radiographically, but histological evaluation has not been done much. The presence of type I collagen expression in periodontal tissue is one indicator of the success of regenerative therapy. Objective: To evaluate the effectiveness of chitosan and RGD-modified chitosan in histologically increasing type I collagen expression in regenerative therapy with horizontal bone damage patterns. Methods and Materials: Samples were stored biologically in the form of periodontal tissue of the lateral incisor Macaca nemestrina after 4 weeks of regenerative therapy with chitosan and RGD-modified chitosan scaffold. Type I collagen expression was evaluated by immunohistochemistry using primary antibody COL1A1. Differences in positive staining areas and color

intensity of type I collagen were analyzed by the grid method on ImageJ and statistical tests using the Mann-Whitney test. The research group was divided into two, namely the chitosan group and the RGD-modified chitosan group. Results: The median chitosan positive staining area was 61.53 (46.64-77.67), greater than the RGD-modified chitosan 25.69 (17.94-35.20) but did not differ statistically (p> 0, 05). Median intensity of staining is weak 35.40 (26.23-50.34), moderate 24.48 (3.25-34.95) and strong 3.16 (0.34-11.65) positive staining area for chitosan groups is more were large in the RGD-modified chitosan group, but were not statistically significant. Conclusion: Chitosan scaffold therapy and RGD-modified chitosan have the potential to regenerate periodontal tissue with a pattern of horizontal bone damage. The addition of RGD to scaffold has no effect on the expression of type I collagen.penggunaan chitosan dan RGD-modified chitosan scaffold