Quantitative analysis of per apical defects regeneration after alge- derived hydroxyapatite application by SPECT bone scan

Hussein R Farghaly, Abd Elaziz B Abd Ala, Mansour Hussein

Abstract:

Objective. To evaluate the value of quantitative SPECT bone scintigraphy in assessment of the healing process of periapical defects after filling with algae- derived hydroxapatite. Methods. Twenty patients were included in the present study. Patients were randomly allocated into two equal groups each comprised 10 subjects. In group A periapical surgery was preformed with FRIOS® Algipore® material was applied in periapical bone defects, in group B periapical surgery was preformed without FRIOS® Algipore® material was applied in periapical bone defects. SPECT bone scintigraphy was done for all patients at one month, three months and five months postoperatively. Osteoblastic activity at the defect site was compared with the activity within the skull (reference) to calculate an osteoblastic activity index (AI). Results. It was found that 11 patients (nine were in study group and two were in control group) showed three distinct phases in relation to the bone activity index. (Phase 1) demonstrates a slow rise of the AI, suggesting increased osteoblastic activity. At three months, maximal activity reached, reflected to (Phase 2). At about five months, bone activity decreased to return toward lower level than baseline values (Phase 3). However, in other nine patients (one was in study group and eight were in control group) at phase 3, bone activity decreased to return toward baseline values and not lower than them. At one month, the difference between the control and the study groups activity index was non-significant ($P > 0.05$). While at the three months, the difference between the control and the study groups activity index was significant (P

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