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"Quantitative assessment of salivary gland function by radioisotopic scanning in a randomized trial of Pilocarpine for prevention of radiation induced Xerostomia "

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### Abstract:

Introduction: Radioisotope scanning is the best method for objective assessment of salivary gland function. Thus, it was used in a randomized trial of concomitant pilocarpine for assessment of radiation-induced xerostomia, in addition to subjective evaluation by an approved questionnaire and objective standard xerostomia grading. Methods: Patients randomized in placebo-controlled trial of pilocarpine concurrent with irradiation for prevention of radiation-induced xerostomia were evaluated by salivary gland scintigraphy immediately before and 6 months after the end of head and neck radiotherapy. Salivary gland function was measured by ejection fraction (EF) of Technetium-99m pertechnetate. The mean values for pre and post-radiotherapy scans were calculated and compared. Also post-radiotherapy scan findings in the two groups of pilocarpine and placebo were compared using the student's t-test. In addition, comparison was made between the scan results and the subjective findings and objective gradings. Results: Twenty patients underwent the pre-radiotherapy salivary scintigraphy, and also 20 post-radiotherapy scans were performed. Mean parotid EF was 60.85% in the pre-radiotherapy and 9.08% in the post-radiotherapy scans ( $P < 0.01$ ). The means for submandibular glands in the pre and post-radiotherapy scans were 41% and 11.2%, respectively ( $P < 0.01$ ). Also the mean EF was 14.5% in the pilocarpine group and 3.65 in the placebo group for parotid glands ( $P = 0.07$ ) and 18.3% and 4.1% respectively for submandibular glands ( $P < 0.05$ ). The salivary scans confirmed the subjective and objective xerostomia findings. Conclusion: Salivary gland scintigraphy is a valuable method for evaluation of xerostomia after head and neck radiotherapy, quantitatively demonstrating the protective effect of pilocarpine compared to placebo on salivary glands.

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