Response Monitoring by Positron Emission Tomography during Radiotherapy of a Squamous Cell Skin Carcinoma

Abstract:
Background: Radiotherapy of skin cancer in a previously irradiated area is a challenging task with regard to cumulative total dose and consecutive normal tissue toxicity. Methods of biological response monitoring might be helpful in achieving a favorable therapeutic ratio. Patient and Methods: We report the case of a 77-year-old patient with squamous cell skin carcinoma originating within a previous radiotherapy field. Initially, the patient refused surgical resection. 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography (FDG-PET) was performed before reirradiation and after 44 Gy. Results: FDG-PET showed no change in the standardized uptake value, i.e. no metabolic response. Clinically, the tumor failed to shrink after radiotherapy with a total dose of 64 Gy and progressed rapidly within the first 8 weeks of follow-up. Confirmatory biopsies were obtained and salvage surgery attempted. Conclusion: In this case, FDG-PET after 44 Gy correctly identified a non-responding patient with squamous cell skin cancer. Thus, further assessment of this method for response evaluation and treatment optimization appears warranted.

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