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Skin Reactions after Breast-conserving Therapy and Prediction of Late Complications Using Physiological Functions.

Sekine H, Kobayashi M, Honda C, Aoki M, Nakagawa M, Kanehira C; Department of Radiology, Division of Radiotherapy, The Jikei University School of Medicine, 3-25-8 Nishi-Shinbashi, Minato-ku, Tokyo 105-8461, Japan. BACKGROUND: The temperature of the skin remains elevated long after breast-conserving treatment with irradiation, perhaps because evaporative cooling is impaired. We investigated physiological changes of the irradiated skin and reevaluated the radiosensitivity of sweat glands on a functional basis to determine whether severe complications can be predicted. METHODS: Breast and axillary skin temperatures were measured with thermography and sweat production in response to local thermal stimuli was measured on the basis of changes in electrical skin resistance with a bridge circuit in 45 women before, during, and after breast irradiation for breast cancer. RESULTS: Breast and axillary temperatures were significantly increased after irradiation. In response to cutaneous thermal stimuli, the electric skin resistance of nonirradiated areas decreased significantly because of sweating, but that of irradiated areas was unchanged. CONCLUSION: Impairment of sweating may play an important role in skin damage after irradiation. Although glandular tissue is not usually radiosensitive, the results of our functional assessment suggest that sweat glands are more radiosensitive than expected.