Abstracts

Development of RF and microwave heating equipment and clinical applications to cancer treatment in Japan

M. Hiraoka, M. Mitsumori, N. Hiroi, S. Ohno, Y. Tanaka, Y. Kotsuka and K. Sugimachi. "Development of RF and microwave heating equipment and clinical applications to cancer treatment in Japan." 2000 Transactions on Microwave Theory and Techniques 48.11 (Nov. 2000, Part I [T-MTT] (Mini-Special Issue on RF/Microwave Applications in Medicine)): 1789-1799.

Development of RF and microwave (MW) heating equipment for hyperthermia and their clinical applications to various cancers undertaken in Japan have been reviewed in this paper. Originally developed heating devices include an RF capacitive and RF inductive heating device, an MW heating device with a lens applicator, an RF intraluminal heating device, an RF current interstitial heating device, and a ferromagnetic implant heating device. The concept and characteristics of those devices are described herein. Nonrandomized and randomized trials undertaken for superficial and deep-seated tumors demonstrated improved local response with the combined use of hyperthermia. Furthermore, the complications associated with treatment were not generally serious, except for chronic bowel damages suggested in a trial for colorectal cancers. These clinical results indicate the benefit of combined treatment of hyperthermia and radiotherapy. With the advancement of heating and thermometry technologies, hyperthermia will be more widely and safely used in the treatment of cancers.

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