Abstracts

Microwave Prostatic Hyperthermia: Interest of Urethral and Rectal Applicators Combination-- Theoretical Study and Animal Experimental Results

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Microwave thermotherapy systems used for benign prostatic hyperplasia treatment generally operate with urethral or rectal applicator to deliver the microwave energy in the prostate. This technique does not allow an efficient heating of all the gland particularly in the case of large adenoma or when the treatment is limited to only one heating session. A solution to this problem is given by using simultaneously the rectal and urethral applicators. A complete 915-MHz microwave thermotherapy system is presented with two applicators which can operate independently or simultaneously to deliver the microwave energy in the prostate. Electromagnetic and thermal modeling have been developed for the applicator antenna optimization, to calculate the specific absorption rate (SAR) and the thermal pattern in the prostate for each applicator alone and when they operate together in phase. Different canine experiments have been performed to prove the interest of using the two applicators simultaneously as compared when they operate alone. Hystological examination cuts of the prostate gland after heating have been carried out.

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