

# The role of hyperthermia in the battle against cancer

Mario Palazzi, Sergio Maluta, Stefano Dall'Oglio, and Mario Romano

*Radiation Oncology Department, University Hospital, Verona, Italy*

---

## ABSTRACT

---

**Aims and background.** Hyperthermia, the heating of tumors to 41.5-43 °C, could be today considered the fourth pillar of the treatment of cancer. Employed for 20 years in Europe, the USA and Asia, hyperthermia, used in addition to radiotherapy, chemotherapy and surgery, increases both local control and overall survival, restores the chance of the surgery for inoperable tumors and allows a new low-dosage treatment of relapsed cancers previously treated with high radiotherapy dosage without increasing toxicity.

**Methods.** Hyperthermia can be either superficial, produced by a microwave generator, or regional, produced by a radiofrequency applicator with multiple antennas, which emanate a deep focalized or interstitial heating.

**Results.** The results are confirmed by phase III randomized trials, with level 1 evidence. A review of the international literature on hyperthermia, the experience of the University Hospital of Verona Radiotherapy Department (Italy) and a summary of the Symposium regarding the Evolution of Clinical Hyperthermia plus Radiotherapy during the Twentieth Congress of the French Society of Radiation Oncology (SFRO) are presented.

**Conclusions.** Hyperthermia is an important treatment modality in cancer treatment and its results are strongly supported by criteria of evidence-based medicine. Fifteen years of experience of the Radiation Oncology Department in Verona confirms the positive results obtained with international prospective trials, with level 1 evidence. Hyperthermia appears to be the fourth pillar beside surgery, radiotherapy and chemotherapy. Free full text available at [www.tumorionline.it](http://www.tumorionline.it)

---

**Key words:** chemotherapy, hyperthermia, level 1 evidence, radiotherapy.

*Correspondence to:* Dr Mario Palazzi, UO di Radioterapia Oncologica, Azienda Ospedaliera Universitaria Integrata, Piazzale A. Stefani 1, 37126 Verona, Italy.  
Tel +39-045-812-2478;  
fax +39-045-812-2062;  
e-mail  
[mario.palazzi@ospedaleuniverona.it](mailto:mario.palazzi@ospedaleuniverona.it)

Received February 11, 2010;  
accepted July 8, 2010