

RADIOTHERAPY PLUS HYPERTHERMIA IN LOCALLY ADVANCED PROSTATE CANCER

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Background

In locally advanced prostate cancer (LAPC) Conformal Radiotherapy (CRT) should be considered the first therapeutic option. To improve results oncologists utilized different approaches such as whole pelvis irradiation, dose-escalation, and androgen suppression (AS). CRT, allowing a dose more than 80 Gy, may increase local control providing that patients accept the risk of higher complications. Local hyperthermia (LHT) combined with radiation therapy at lower doses than 80 Gy, could be a method to raise effectiveness of radiotherapy in the prostate cancer without increasing toxicity. LHT does not increase late effects when added to conventional radiotherapy and it seems enhance efficacy of combined treatment (Anscher 1997, Kalapurakal 2000). LHT is feasible and well tolerated and it permits a heat uniform distribution in the prostate and in seminal vesicles, with optimal temperature levels.

Rectal grade 2-3 complications increase from 12 to 26% when delivered dose raises from 70 to 78 Gy. The use of LHT should avoid the hazards of this dose escalation. Primary endpoints of this study were: to evaluate freedom from biochemical recurrence, disease-free survival, time to distant failure, overall survival and quality of life of patients treated by using radiotherapy and local hyperthermia. Secondary endpoints: to evaluate toxicity and quality of life of combined treatment.

Material and Methods

From November 1998 to December 2004, 144 patients with LAPC were treated by using CRT plus LHT. Mean PSA level and Gleason score of these patients were 13 ng/ml (range 6-90) and 7 (range 6-9), respectively.

Treatment modality: a) CRT: mean dose of 74 Gy (range 68-78 Gy) with fractionation of 2 Gy/fraction/5 fraction per week. CTV: prostate and seminal vesicles with a margin of 5 mm. Technique: six-field isocentric conformal radiotherapy by using MLC and photons of 6 or 10 MV; b) LHT: 1 session/week during the four week of radiotherapy course (mean maximum temperature of 41.17°C, and mean T90 of 40.36°C), by using BDS 2000 with Sigma-60 applicator®; c) AS performed 3-6 months before the start of CRT in more than 60% of patients. AS was continued during the all radiotherapy course.

Results

Four patients were lost at follow-up. Of 140 evaluable patients, 4 died because of inter-current diseases and 12 because of progression of disease. Of 124 patients still alive, 108 are free of disease. Nine patients had a progression of disease and 7 developed recurrences.

Clinical results are the following: 5-year OS: 88.5%, 5-year DFS: 77.1%, local recurrence: 5%, distant metastases: 6.4% , no significant side effects (except side effects, symptoms AS-related).

Biochemical response: one month later the end of radiotherapy the mean PSA was 0.2 (range 0.1-35). Six patients, with a mean follow-up of 39 months, had a biochemical progression, with a 3-year b-DFS of 94.3%.

Conclusion

In LAPC, LHT plus CRT is a promising approach useful to enhance irradiation effectiveness. The advantages of combined therapy should be confirmed by phase III trials, even if to demonstrate the added effect of hyperthermia could be quite difficult considering the good results achieved by using the conventional treatment alone.