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Prostate

High-dose radiotherapy or androgen deprivation therapy (HEAT) as treatment intensification for localised prostate cancer: An individual patient–data network meta-analysis from the MARCAP Consortium

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BACKGROUND

The relative benefits of radiotherapy (RT) dose escalation and the addition of short-term or long-term androgen deprivation therapy (STADT or LTADT) in the treatment of prostate cancer are unknown.

OBJECTIVE

To perform a network meta-analysis (NMA) of relevant randomised trials to compare the relative benefits of RT dose escalation ± STADT or LTADT.

DESIGN, SETTING, AND PARTICIPANTS

An NMA of individual patient data from 13 multicenter randomised trials was carried out for a total of 11,862 patients. Patients received one of the six permutations of low-dose RT (64 to <74 Gy) ± STADT or LTADT, high-dose RT (≥74 Gy), or high-dose RT ± STADT or LTADT.

OUTCOME MEASUREMENTS AND STATISTICAL ANALYSES

Metastasis-free survival (MFS) was the primary endpoint. Frequentist and Bayesian NMAs were performed to rank the various treatment strategies by MFS and biochemical recurrence-free survival (BCRFS).

RESULTS AND LIMITATIONS

Median follow-up was 8.8 yr (interquartile range 5.7-11.5). The greatest relative improvement in outcomes was seen for addition of LTADT, irrespective of RT dose, followed by addition of STADT, irrespective of RT dose. RT dose escalation did not improve MFS either in the absence of ADT (hazard ratio [HR] 0.97, 95% confidence interval [CI] 0.80-1.18) or with STADT (HR 0.99, 95% CI 0.8-

1.23) or LTADT (HR 0.94, 95% CI 0.65-1.37). According to P-score ranking and rankogram analysis, high-dose RT + LTADT was the optimal treatment strategy for both BCRFS and longer-term outcomes.

CONCLUSIONS

Conventionally escalated RT up to 79.2 Gy, alone or in the presence of ADT, does not improve MFS, while addition of STADT or LTADT to RT alone, regardless of RT dose, consistently improves MFS. RT dose escalation does provide a high probability of improving BCRFS and, provided it can be delivered without compromising quality of life, may represent the optimal treatment strategy when used in conjunction with ADT.

PATIENT SUMMARY

Using a higher radiotherapy dose when treating prostate cancer does not reduce the chance of developing metastases or death, but it does reduce the chance of having a rise in prostate-specific antigen (PSA) signifying recurrence of cancer. Androgen deprivation therapy improves all outcomes. A safe increase in radiotherapy dose in conjunction with androgen deprivation therapy may be the optimal treatment.