Simultaneous transurethral resection of bladder cancer and prostate may reduce recurrence rates: a systematic review and meta-analysis

Li S, Zeng XT, Ruan XL, Wang XH, Guo Y, Yang ZH

CRD summary
The authors concluded that in patients with non-muscle invasive bladder cancer and benign prostatic hyperplasia, simultaneous resection might reduce overall recurrence of bladder tumours, without affecting metastasis and tumour progression, but better research was needed. The results were based on small samples and non-randomised controlled trials; caution is warranted and it was appropriate to recommend further research.

Authors' objectives
To evaluate the recurrence rate after simultaneous transurethral resection of the bladder and prostate, for non-muscle invasive bladder cancer, with benign prostatic hyperplasia.

Searching
PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, and Web of Knowledge were searched for relevant studies, published in English, from database inception to March 2012. Search terms were reported. Reference lists of the identified studies were searched.

Study selection
Randomised controlled trials (RCTs) or non-randomised concurrent controlled trials (NRCCTs) were eligible for inclusion if they compared simultaneous transurethral resection of the bladder tumour and prostate, versus transurethral resection of the bladder tumour alone, in patients with non-muscle invasive bladder cancer (including Ta or T1) and benign prostatic hyperplasia, of any severity. Trials in which adjuvant chemotherapy was administered were eligible. Trials had to report the patients' ages, length of follow-up, and tumour stages. The following outcomes had to be reported: overall tumour recurrence rates, recurrence rate at the prostatic urethra or bladder neck, and tumour progression. Only full-text reports were included, and trials of patients with prostate cancer were excluded.

The included trials were conducted in the USA, Korea, India, Turkey, or Tunisia, between 1972 and 2010. The mean age of the participants ranged from 56 to 71 years.

The authors did not report how many reviewers were selected the trials.

Assessment of study quality
Trial quality was assessed using the Cochrane risk of bias tool, for the RCTs, and the Methodological Index for Non-Randomised Studies (MINORS), which has 12 criteria, for NRCCTs. The maximum score for NRCCTs was 24 points, and 16 or more indicated high quality. GRADE criteria were used to assess the overall level of confidence (high, moderate, low, or very low) in the effect estimate.

Two reviewers independently evaluated trial quality.

Data extraction
The data were extracted to calculate odds ratios and 95% confidence intervals. Trial authors were contacted for missing information. Two reviewers independently extracted the data.

Methods of synthesis
Pooled odds ratios and their 95% confidence intervals were calculated. Heterogeneity was assessed using $I^2$, with values of 40% considered to be low, 70% moderate, and 100% high. A fixed-effect model was used for the meta-analysis, if there was no evidence of heterogeneity ($I^2 \leq 40\%$); otherwise a random-effects model was used.

Where there was evidence heterogeneity, sensitivity and subgroup analyses were conducted. Sensitivity analysis was performed by excluding one trial at a time. Subgroup analysis was performed by methodological quality (low versus...
Publication bias was assessed in funnel plots.

**Results of the review**

Eight studies (seven NRCTs and one RCT) were included in the review (1,372 participants; range 48 to 287). The quality of the included NRCTs was high (16 points or more) and that of the RCT was moderate. According to the GRADE system, the level of evidence was moderate or low. The mean follow-up ranged from 27.4 to 132 months.

**Overall tumour recurrence**: The meta-analysis showed that simultaneous transurethral resection of the bladder cancer and prostate significantly reduced recurrence, compared with resection of the bladder tumour alone (OR 0.76, 95% CI 0.60 to 0.96; I²=40%; seven NRCTs). The RCT showed no significant difference in the overall recurrence rate, between simultaneous and control groups.

**Recurrence at the prostatic urethra and bladder neck**: There was no statistically significant difference in recurrence at the prostatic urethra, bladder neck, or both, with simultaneous transurethral resection, compared with bladder resection alone (seven NRCTs). A similar result was found in the RCT.

**Tumour progression**: The meta-analysis (four NRCTs) and the RCT showed no significant difference between simultaneous and control groups.

**Authors' conclusions**

For patients with non-muscle invasive bladder cancer and benign prostatic hyperplasia, simultaneous resection might reduce the overall recurrence of bladder tumours, without affecting metastasis and tumour progression, but large-scale, high-quality randomised controlled trials were required.

**CRD commentary**

The review addressed a clear question and was supported by appropriate inclusion criteria. The search covered a range of relevant sources. Unpublished trials and those in languages other than English were not sought, so relevant trials may have been missed. Attempts were made to reduce the risk of error and bias in data extraction and quality assessment, but it was unclear whether similar attempts were made for study selection. Appropriate methods were used to assess trial quality and the level of evidence.

Appropriate methods were used to pool the results and assess heterogeneity. Publication bias was assessed, but the results were not reported. The non-randomised trials controlled for important confounding factors, but the possibility of bias from characteristics, such as tumour status, postoperative bladder perfusion, and the technique of the surgeons, could not be ruled out. This could overestimate the result, compared with randomised trials, which the authors acknowledged. They also acknowledged the lack of a long-term survival rate in some trials, and the small samples in the included trials.

The cautious conclusions reflect the evidence presented, but the results were based on small samples and non-randomised controlled trials. Caution is warranted when interpreting these results, and it was appropriate to recommend further research.

**Implications of the review for practice and research**

**Practice**: The authors did not state any implications for practice.

**Research**: The authors stated that further high-quality, multicentre RCTs, with large samples, were needed to evaluate the efficacy and safety of simultaneous resection, over the long-term, and record the survival rates at five or 10 years.

**Funding**

Support received from Wuhan University, and the Hubei University of Medicine, China.

**Bibliographic details**

PubMedID
23170127

DOI
10.3892/etm.2012.660

Original Paper URL

Indexing Status
Subject indexing assigned by CRD

MeSH
Humans; Prostate; Recurrence; Transurethral Resection of Prostate; Urinary Bladder Neoplasms; Prostatic Neoplasms; Urologic Surgical Procedures

AccessionNumber
12012042869

Date bibliographic record published
31/10/2012

Date abstract record published
06/03/2013

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.