Anti-tumour activity of platinum compounds in advanced prostate cancer-a systematic literature review

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BACKGROUND
For men with advanced castration-resistant prostate cancer (CRPC), several treatment options are available, including androgen receptor (AR) pathway inhibitors (abiraterone acetate, enzalutamide), taxanes (docetaxel, cabazitaxel) and the radionuclide (radium-223). However, cross-resistance is a clinically relevant problem. Platinum compounds have been tested in a number of clinical trials in molecularly unselected prostate cancer patients. Advances in CRPC molecular profiling have shown that a significant proportion of patients harbour DNA repair defects, which may serve as predictive markers for sensitivity to platinum agents.

OBJECTIVE
To systematically identify and analyse clinical trials that have evaluated platinum agents in advanced prostate cancer patients.

METHODS
PubMed was searched to identify published clinical trials of platinum agents in advanced prostate cancer. The PRIMSA statement was followed for the systematic review process. Identified trials are analysed for study design, statistical plan, assessments of anti-tumour activity and the potential value of predictive biomarkers.

RESULTS
A total of 163 references were identified by the literature search and 72 publications that met the selection criteria were included in this review; of these 33 used carboplatin, 27 cisplatin, 6 satraplatin, 4 oxaliplatin and 2 other platinum compounds. Overall, anti-tumour activity varies in the range of 10%-40% for objective response and 20%-70% for PSA decline ≥50%. Response seemed highest for the combinations of carboplatin with taxanes or oxaliplatin with gemcitabine. The interpretation of the clinical data is limited by differences in response criteria used and patient populations studied.

CONCLUSION

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Platinum compounds have moderate anti-tumour activity in molecularly unselected patients with advanced prostate cancer. Translational evidence of DNA repair deficiency should be leveraged in future studies to select prostate cancer patients most likely to benefit from platinum-based therapy.

type	journal paper/review (English)
date of publishing	06-04-2016
journal title	Ann Oncol (27/6)
ISSN electronic	1569-8041
pages	975-84