



IMMUNE CHECKPOINT INHIBITORS IN METASTATIC CASTRATION-RESISTANT PROSTATE CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS



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INTRODUCTION

Prostate cancer ranks second among the most prevalent tumors in men globally. While localized disease can often be effectively treated with current strategies, metastatic castration-resistant prostate cancer presents a challenging prognosis with limited treatment options, demanding the exploration of new approaches. Immune checkpoint inhibitors, commonly used for tumors with high somatic mutation rates, have emerged as a novel biologic treatment option for this disease. While immunotherapy, particularly with immune checkpoint inhibitors, holds promise, real-world data on its safety and efficacy remains inconclusive,

METHODS

A systematic search was conducted in PubMed, Embase, and Cochrane Library databases from January 2010 to December 2023 including the keywords "PD-1 inhibitor", "PD-L1 inhibitor", "CTLA-4 inhibitor", "metastatic castration-resistant prostate cancer," and "immune checkpoint inhibitors." Phase I, II and III clinical trials reporting on the efficacy and safety of immune checkpoint inhibitors in metastatic castration-resistant prostate cancer were included. We performed statistical analysis that included calculating pooled overall survival rate, objective response rate, prostate specific antigen response and adverse event rates using a random-effects model. The data was calculated and pooled using the software STATA version 12.0 and R software version 3.6.0

RESULTS

The initial search identified 2178 articles, of which 10 met the inclusion criteria and were included in the meta-analysis. The pooled analysis revealed an 1-year overall survival rate of 55.6% (95% CI: 47.2–65.3%) and an objective response rate of 12% (95% CI: 5.68-18%). The prostate specific antigen response rate was 17.3% (95% CI: 13.6-23.2%) The incidence of grade 3 or higher treatment-related adverse events was 41.8% (95% CI: 37.5–50.3%)

CONCLUSION

Metastatic castration-resistant prostate cancer remains incurable, with treatment goals being focused on extending survival and enhancing patients' quality of life. In our meta-analysis, immune checkpoint inhibitors demonstrated modest efficacy with manageable safety profiles. However, it is important to notice that the risk of grade 3 adverse events reached up to 41.8%. Nonetheless, while our findings suggest that immunotherapy holds potential for new successful treatment strategies, there is the need for further exploration and refinement of immunotherapeutic strategies in this challenging malignancy.