Treatment of Advanced Prostate Cancer-A Review of Current Therapies and Future Promise.

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Despite many recent advances in the therapy for metastatic castration-resistant prostate cancer (mCRPC), the disease remains incurable, although men suffering from this disease are living considerably longer. In this review, we discuss the current treatment options available for this disease, such as taxane-based chemotherapy, the novel hormone therapies abiraterone and enzalutamide, and treatments such as radium-223 and sipuleucel-T. We also highlight the need for ongoing research in this field, because, despite numerous recent advances, the prognosis for mCRPC remains poor. Furthermore, as a growing body of evidence shows the increasing heterogeneity of the disease, and highlights the ongoing need for disease molecular stratification and validation/qualification of predictive biomarkers, we explore this burgeoning research space that is likely to transform how we treat this disease. We describe putative predictive biomarkers, including androgen receptor splice variants, phosphatase and tensin homolog (PTEN) loss, homologous recombination repair defects, including BRCA2 loss, and mismatch repair defects. The development of next-generation sequencing techniques and the routine biopsy of metastatic disease have driven significant advances in our understanding of the genomics of cancer, and are now poised to transform our treatment of this disease.

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