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Which, when and why? Rational use of tissue-based molecular testing in localized prostate cancer.

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Author information

Abstract

An increased molecular understanding of localized prostate cancer and the improved ability for molecular testing of pathologic tissue has led to the development of multiple clinical assays. Here we review the relevant molecular biology of localized prostate cancer, currently available tissue-based tests and describe which is best supported for use in various clinical scenarios. Literature regarding testing of human prostate cancer tissue with Ki-67, PTEN (by immunohistochemistry (IHC) or fluorescence in situ hybridization (FISH)), ProMark, Prolaris, OncotypeDX Prostate and Decipher was reviewed to allow for generation of expert opinions. At diagnosis, evaluation of PTEN status, use of ProMark or OncotypeDX Prostate in men with Gleason 6 or 3+4=7 disease may help guide the use of active surveillance. For men with Gleason 7 or above disease considering watchful waiting, Ki-67 and Prolaris add independent prognostic information. For those men who have undergone prostatectomy and have adverse pathology, Decipher testing may aid in the decision to undergo adjuvant radiation. Newly available molecular tests bring opportunities to improve decision making for men with localized prostate cancer. A review of the currently available data suggests clinical scenarios for which each of these tests may have the greatest utility. Prostate Cancer and Prostatic Disease advance online publication, 30 June 2015; doi:10.1038/pcan.2015.31.

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