Ablative Therapies in Prostate Cancer

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The management of localized prostate cancer has centred on surveillance or radical therapy such as prostatectomy or radiotherapy. Furthermore, due to the reduction in disease severity as a result of early detection it is likely that the small absolute risk reduction - of approximately 5% over 10 years that has been demonstrated in a randomised controlled trial comparing surgery with watchful waiting - in men with low to moderate risk disease is likely to be reduced even further. The advent of active surveillance with selective delayed intervention is also likely to make this difference in mortality between surveillance and radical therapy less significant. As radical treatments carry significant morbidity with operative complications (wound infection, haemorrhage, hospital stay) and can cause significant long-term toxicity (incontinence, impotence, rectal problems) there has been a demand to develop ablative therapies that attempt to reduce treatment burden whilst retaining cancer control and avoiding the psychological morbidity associated with surveillance.

The attributes of a treatment that would appeal to patients faced with the therapeutic dilemma described above would have to share the well tolerated aspects of active surveillance and equal - or approach so closely as to be indiscernible - the oncological control afforded by surgery or radiotherapy.

One way of reducing the unwanted side-effects from radical treatment of PCa may be to direct treatment to only areas of cancer - this is deemed focal therapy.

Such a proposed change in treatment of prostate cancer reflects the management of all other solid organ cancers, in which organ preservation is fundamental to functional preservation (breast, kidney, liver, lung). With focal therapy of prostate cancer, it is proposed that by avoiding the bladder neck, rectum, external sphincter and at least one neurovascular bundle, side-effects could be reduced. For this to be feasible, localisation of cancer within the prostate must be more precise to ensure that malignant areas are not left untreated and areas of clinically significant cancer and a margin of normal tissue are within the treatment zone. In addition, ablative technologies that can treat parts of the prostate are also required. Focal therapy can be delivered using a number of ablative modalities that can treat discrete areas of tissue. These include high intensity focused ultrasound (HIFU), cryosurgery, photodynamic therapy, brachytherapy and radiofrequency ablation. All are at different stages of development with HIFU, cryosurgery and photodynamic therapy at a stage of phase II evaluation within trials that they could be applied in long term efficacy trials.