

Visually directed HIFU for prostate cancer- a new standard

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Introduction: Trans-rectal High Intensity Focused Ultrasound (HIFU) is a non-invasive ablation therapy that has been used for the treatment of organ confined prostate cancer. The majority of published series have reported the results of devices which have not permitted real time feedback to the operator during treatment. Real time feedback has been cited as a key desirable attribute of ablation therapies. We report the first description of the outcomes produced when real time grey scale feedback is used as the principal determinant of dose.

Materials and Methods: Thirteen men (mean age 61, range 50 to 75) have been treated in 2005 who have a minimum of 3 months follow-up. Three months is the minimum time required to reach a PSA nadir following treatment. Disease stage was T1 (n=8) or T2 (n=5), mean PSA 8.30 (range 3.70 to 13.70) and Gleason score 4+3 (n=1), 3+4 (n=4), 3+3 (n=6) or 2+3 (n=1). One man had previously undergone transurethral resection of the prostate and the mean prostate volume was 27cm³ (range 18 to 30). None had previous hormone or 5-alpha reductase inhibitor therapy. Men received a single treatment session under general anaesthetic. The Sonoblate 500 device was used in all cases. Both imaging and treatment was carried out using a bi-plane, bi-concave probe (focal lengths 3 & 4cm). Grey scale changes were assessed during treatment and used to guide ultrasonic exposure parameters.

Results: Twelve patients treated have achieved PSA nadirs of 0.2ng/l or less, three months after treatment. Six patients have achieved undetectable PSA values. The mean operative time was 244 minutes (range 200 to 345) and all patients were discharged the same day with an indwelling urethral catheter. Twelve patients became catheter free at first attempt (mean 12 days, range 10 to 27).

Conclusions: Visually directed HIFU can achieve low PSA nadirs. In this small group of patients visually directed HIFU compares favourably with both brachytherapy and cryotherapy in the treatment of organ confined prostate cancer. PSA levels have fallen to 0.2ng/l or less in 92% of cases and to an undetectable level in six patients. Accrual of further patients and longer term follow up will confirm whether the PSA nadirs are maintained and allow meaningful risk stratification.