Prostate Cancer Treated by Sonodynamic and Photodynamic Therapy (SPDT, NGPDT)

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Introduction
This phase 1 ethics approved trial has been established to assess the potential role of Sonodynamic and Photodynamic Therapy using Radachlorin, Sonelux and Photosoft sensitisers in a cohort of 66 patients, across a range of biopsy-proven prostate cancer patients. Including patients with focal disease who are under surveillance and also patients with persisting cancer, after radical treatments.

History of light therapy
1903 Nobel Prize N. Finsen - Light therapy.
1904 Von Tappeiner - PD reaction first shown.
1925 Nobel Prize H. Fischer - Porphyrins.
1942 Porphyrins - First used in treatments
1956 Light Bed therapy for Neonatal Jaundice.
1971-85 Dougherty - Photofrin therapy.

Russian and Chinese PDT developments
Western interest in PDT applications.
1990 Windahl et al. - PDT for local prostate cancer.
2006 Moore & Emberton - Interstitial PDT.

Aim
To investigate the role of sono and photo-dynamic therapy in the treatment of prostate cancer.

Method
The sensitiser is taken sub-lingual or orally 16-24 hours before each treatment cycle.
The laser and ultrasound probes provide the energies which are directed at the prostate in a combination of trans-rectal, trans-urethral and per-cutaneous techniques.
Energy delivered AM and PM each day (25 min max.) for 3 days over one week and then repeated twice in 12 weeks.
Laser red light at a maximum of 2 watt → 4000-5000 Joules. Ultrasound set to a maximum of 1 watt and at low frequency. The treatment is performed as an Outpatient procedure with eye protection provided.

Conclusion
The phase 1 criteria have been met regarding the sensitiser doses and equipment safety. Normal bladder and bowel function, as well as unaltered potency have been recorded. A stable or decreasing PSA has been recorded in 13/26 patients. An apparent / proven decrease in prostate size (ref.1) has been noted. This experimental treatment may have a future in the management of prostate disease.

References

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