

## Targeted therapy using sound-waves offers 'male lumpectomy' for prostate cancer

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(Medical Xpress) -- A new type of prostate cancer treatment, which uses sound waves to selectively target individual cancer sites, could provide an alternative to traditional treatment with significantly fewer side effects, according to promising results from a clinical trial.

The study, funded by the Medical Research Council (MRC), is the first to use an [experimental treatment](#) known as HIFU (high-intensity focused ultrasound) to treat areas of cancer just a few millimeters in size (focal therapy). Focal therapy is similar in principle to the 'lumpectomy' operation commonly used as an alternative to a full mastectomy in breast cancer.

The results, published in *Lancet Oncology*, show that 12 months after treatment, none of the 41 men in the trial had incontinence of urine and just 1 in 10 suffered from poor erections – both common side effects of conventional treatment. The majority of men (95 per cent) were also cancer-free after a year.

Dr. Hashim Ahmed, who led the study at University College London Hospitals NHS Foundation Trust (UCLH) and UCL (University College London), said: “Our results are very encouraging. We’re optimistic that men diagnosed with [prostate cancer](#) may soon be able to undergo a day case surgical procedure, which can be safely repeated once or twice, to treat their condition with very few side-effects. That could mean a significant improvement in their quality of life.

“This study provides the proof-of-concept we need to develop a much larger trial to look at whether focal therapy is as effective as the current standard treatment in protecting the health of the men treated for prostate cancer in the medium and long term.”

Prostate cancer is the commonest cancer in men. In the UK, more than 37,000 men are diagnosed each year and the condition leads to approximately 10,000 deaths. However, men with prostate cancer can live for years without their disease getting worse and many are faced with a difficult decision between therapy that may lead to side effects and active surveillance of their condition. Research efforts have therefore centred around reducing the impact of treatment on quality of life.

The standard therapy currently involves treating the whole prostate, either with radiotherapy or surgery (removing it completely). Both cause damage to the surrounding healthy tissue and can lead to substantial side effects such as urinary incontinence requiring one or more pads a day (5-25 per cent), erections insufficient for sexual intercourse (30-70 per cent) and rectal problems (diarrhoea, bleeding, pain; 5-10 per cent).

Men who undergo traditional treatment have a 50 per cent chance of achieving the so-called trifecta status – the ‘perfect outcome’ with no urine leak, good erections and cancer control at 12 months after surgery or radiotherapy. In this study, the researchers showed that after focal therapy men have a 9 in 10 chance of achieving the trifecta outcome at 12 months.

The researchers previously used HIFU to treat the entire half of the prostate where the cancer was situated. That study also showed similar reduction in side-effects and encouraging early cancer control. In this study, they wanted to see if they could reduce damage to healthy tissue even further by treating only the specific cancer sites.

They used two highly sensitive diagnostic techniques – MRI and mapping biopsies – to enable them to pinpoint the exact location of the cancer lesions(s), something which is not possible with standard diagnostic tests (transrectal biopsy).

The researchers then targeted these areas with the HIFU device. HIFU focuses high frequency sound waves onto an area the size of a grain of rice. The [sound waves](#) cause the tissue to vibrate and heat to about 80 degrees, killing the cells in the target area. The procedure is performed in hospital under general anaesthetic and most patients are back home within 24 hours.

The research program is led by Professor Mark Emberton, of UCL and UCLH. He said: “Focal therapy offers harm reduction – it is a strategy that attempts to redress the balance of harms and benefits by offering men who place high utility on genito-urinary function an alternative to standard care. In fact, the concept is not new - tissue preserving strategies have been used successfully in all other solid organ cancers such as breast cancer by offering women a lumpectomy rather than mastectomy.”

Professor Gillies McKenna, director of the MRC/Cancer Research UK Gray Institute for Radiation Oncology and Biology, said: “[Clinical trials](#), like this one supported by the MRC, are a fantastic tool for telling us whether experimental new treatments are likely to be effective in the clinic. If these promising results can be confirmed in a randomised controlled trial, focal therapy could soon become a reasonable treatment choice for prostate cancer alongside other proven effective therapies.”

Provided by Medical Research Council

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