Targeted radiotherapy technique could cut treatment time from two months to two weeks

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Advanced radiotherapy technology could safely deliver curative treatment for some prostate cancer patients in just one or two weeks, according to new research published today. This is a significant reduction from the current standard of care, which is one to two months and the first time such a short timeframe of treatment has been investigated in a phase III trial.

In the PACE-B trial, published today in *The Lancet Oncology*, researchers at The Royal Marsden NHS Foundation Trust and The Institute of Cancer Research, London, used ultra-hypofractionated stereotactic body radiotherapy (SBRT) to deliver five higher doses of radiation to patients over one to two weeks. Researchers found in the three months after treatment, side effects were no worse when compared with patients who had conventional therapy with more moderate doses over a much longer period of time.

They are still awaiting data on long-term side effects and overall efficacy; in the UK the treatment technique currently only available in a trial setting.

SBRT allows clinicans to target tumours to sub-millimetre precision. Greater accuracy reduces the chance of damaging surrounding healthy tissue, which can lead to urinary and rectal side effects such as more frequent or urgent urination and diarrhoea. In the PACE-B study researchers wanted to understand whether they could safely increase the dose of this targeted radiation, and so reduce the number of treatments required, or if this carried a risk of worse toxicity. When treating patients, clinicians have to consider whether the higher doses in a shorter time period is the best option; the potential side effects are a critical factor in making this decision.

847 patients with prostate cancer were randomised to two groups. 432 patients were allocated the current standard of care receiving moderate hypofractionation radiotherapy (CFMHRT) for either 39 doses over seven/eight weeks, or 20 doses over four weeks. 415 patients were allocated ultra-hypofractionated SBRT, receiving five doses of treatment over one or two weeks. For both groups of patients, 90 per cent of whom had intermediate risk prostate cancer, this was intended to be curative treatment with no further treatment planned.

Patients on the control arm were assessed every other week, and on the SBRT arms assessed after the final dose day, and weeks two, four, eight and twelve after the end of treatment. Researchers incorporated both assessments by clinicians and questionnaires completed by patients. They found patients in both groups had similar levels of side effects over the three months after treatment. They also found side effects in both groups were less overall than had been previously published.

Chief Investigator Dr. Nicholas van As, Consultant Clinical Oncologist at The Royal Marsden NHS Foundation Trust, and Reader at The Institute of Cancer Research, London, said: "At The Royal Marsden and the ICR we are focused on developing smarter, better and kinder treatments for patients across the UK and internationally. Developments in radiotherapy such as SBRT mean we can target tumours much more effectively.

"It is reassuring to see from this trial that SBRT does not significantly impact patients' quality of life in the short term, compared with the current standard of care. Using SBRT to deliver this treatment would mean that patients could be spared numerous visits to hospital, allowing them to get back to their lives sooner."

Dr. van As, who is also Medical Director at The Royal Marsden, added: "These results are promising, and for the first time show in a large patient group that giving five large doses of SBRT is safe in the short term. It is important to point out that we will not know for another few years about the long term side effects and outcomes of treatment, and that this treatment technique is still only available in a trial setting in the UK.

Study author Dr. Douglas Brand, Research Fellow in Clinical Oncology at The Institute of Cancer Research, London, and The Royal Marsden NHS Foundation Trust, said:

"The new results from our clinical trial have shown that a much shorter course of higher-dose radiotherapy does not increase short term side effects compared with the current standard of care.

"If the data on longer-term side effects and efficacy are also positive, we expect our trial could be practice-changing. This would enable us to deliver curative treatment over fewer days—meaning that men would get the same benefit from their radiotherapy while having to spend less time in hospital."

Dr. Brand presented the patient outcomes from PACE-B at today's American Society for Radiation Oncology Annual Meeting (Tuesday 17 September)

Alfred, 84, was diagnosed with prostate cancer in 2013 at The Royal Marsden NHS Foundation Trust. He was able to go onto the PACE B trial for his treatment, and was randomised into the group to receive SBRT.

Alfred says: "I only had to go into The Royal Marsden five times over two weeks to have my radiotherapy treatment with CyberKnife. I was made very comfortable and overall—and not something I'd usually associate with cancer treatment—it was a breeze. I didn't have many symptoms afterwards and was able to get back to my life. In the six years since, I've not had to have any further treatment. The Royal Marsden was excellent—I really couldn't have asked for more."

More information: *The Lancet Oncology* (2019). www.thelancet.com/journals/lan … (19)30569-8/fulltext

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