

# Proton therapy lowers chance of later cancers

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Patients who are treated with proton therapy (a specialized type of external beam radiation therapy using protons rather than X-rays to treat cancer) decreases the risk of patients developing a secondary cancer by two-fold, compared to being treated with standard photon radiation treatment, according to a first-of-its-kind study presented September 22, 2008, at the American Society for Therapeutic Radiology and Oncology's 50th Annual Meeting in Boston.

This study contradicts recent theories that have suggested that proton radiation might actually increase — instead of decrease — the incidence of secondary cancers because of what is called scatter radiation. When proton radiation is delivered, neutrons are produced by nuclear interactions and are therefore scattered as a result.

"This study could have a substantial impact on the care of patients," Nancy Tarbell, M.D., senior author of the study and a radiation oncologist at the Massachusetts General Hospital in Boston, said. "Since cancer patients are surviving for longer periods of time, side effects of therapy are becoming increasingly important for doctors to consider when developing treatment plans. Since this is a retrospective study, however, we will need additional studies to further prove this hypothesis."

Photon radiation is the standard external beam radiation therapy treatment, while proton radiation is a more targeted form of external beam radiation which delivers less radiation to bordering normal structures. During external beam radiation therapy, a beam of radiation

is directed through the skin to the cancer and the immediate surrounding area in order to destroy the main tumor and any nearby cancer cells.

The retrospective cohort study matched 503 patients who underwent Harvard Cyclotron proton radiation treatment with 1,591 patients treated with photon radiation therapy from the Surveillance, Epidemiology, and End Results (SEER) cancer registry from 1974 to 2001. According to the study, 6.4 percent of patients who underwent proton therapy developed a secondary cancer while 12.8 percent of patients who had photon treatment developed another type of cancer.

Source: American Society for Therapeutic Radiology and Oncology

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