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A new analysis has found that a type of radiation therapy called carbon ion radiotherapy can control cancer growth and prolong survival in patients with spinal tumors. Published early online in CANCER, a peer-reviewed journal of the American Cancer Society, the study indicates that the treatment is a promising alternative for patients whose spinal tumors cannot be surgically removed.

Surgery is the mainstay of treatment for spinal sarcomas; however the tumors are one of the most challenging diseases for orthopedic surgeons. In addition, some patients are not candidates for surgery due to the location of the tumor and/or the patient's condition. In these cases, radiation therapy is generally used. Carbon ion radiotherapy is a type of radiation therapy that is known to be effective for treating various types of inoperable sarcomas, which are tumors that arise from connective tissue. Using carbon ions to target radiation to the tumor, the treatment is minimally invasive, has little effect on adjacent healthy tissues, and has the potential to preserve patients' quality of life.

To investigate the effectiveness and

safety of carbon ion radiotherapy for inoperable spinal sarcomas, Reiko Imai, MD, PhD, of the Research Center Hospital for Charged Particle Therapy at the National Institute of Radiological Sciences in Japan, and her colleagues studied the outcomes of 47 patients who received the treatment between 1996 and 2011. In 79 percent of patients, tumor growth was controlled for at least five years. Also, 52 percent of patients survived for at least five years (with 48 percent of patients surviving that long without experiencing cancer progression). None of the 15 patients with tumors that were smaller than 100 cm3 had a cancer recurrence. No fatal toxicities occurred from the treatment, although one patient had a skin

reaction, seven patients experienced vertebral compression salvaged by surgical intervention, and one developed a spinal cord reaction. Twenty-two of the 28 patients who were alive at the last follow-up appointment could walk without supportive devices.

“This report is the first one regarding spinal sarcomas treated with carbon ion radiotherapy, and our findings offer a treatment alternative to patients with inoperable tumors,” said Dr. Imai.