



## Proton Therapy Offers Potential Advantages for Children with Brain Tumors

FAIRFAX, Va., March 3 /PRNewswire/ -- Proton beam therapy offers a clear advantage over both conventional external beam radiation therapy and intensity modulated radiation therapy for treatment of the posterior fossa and spinal column in children with brain tumors, according to a study in the March 1, 2004, issue of the International Journal of Radiation Oncology\*Biophysics\*Physics -- the official journal of ASTRO, the American Society for Therapeutic Radiology and Oncology.

Advances in treatment methods for medulloblastoma -- malignant tumors that develop in the cerebellum -- have led to increased survival rates for children affected by this disease. Now that more and more children are surviving this disease, researchers are investigating ways to reduce the side effects from the standard combination of surgery, external beam radiation and chemotherapy. This study compares the plans for three methods of treating the craniospinal axis in children with medulloblastoma in an effort to establish a more sophisticated radiation beam delivery that reduces radiation doses to nearby brain tissues.

The study examines side-by-side the isodose distributions and dose-volume histograms (DVHs) of target and nontarget sites of IMRT and proton treatment plans with those from a conventional external beam therapy plan. In the first treatment plan, the study used conventional radiation beams to treat the craniospinal axis irradiation with a boost of radiation to the posterior fossa. The second plan consisted of whole-brain irradiation with conventional external radiation and IMRT. The third used whole-brain irradiation using proton fields matched to a posterior-anterior proton spine field.

The study shows that proton beam therapy yielded the greatest dose reduction for surrounding tissues evaluated. While the study revealed that both IMRT and proton treatments offer substantial benefits over standard external beam therapy, proton treatment emerged as superior to IMRT in sparing nearby brain tissues while delivering the most conformal treatment to the posterior fossa.

With proton beam therapy, says study coauthor Jay S. Loeffler, M.D., medical teams can deliver "a conformal dose of radiation to the posterior fossa in an extremely elegant manner, reducing the integral dose that might be seen with conformal external beam therapy techniques." Loeffler is the Herman and Joan Suit Professor and Chair of the Department of Radiation Oncology at Harvard Medical School's Massachusetts General Hospital in Boston. "For children requiring radiation treatment for medulloblastoma," says Loeffler, "it is clear, both for the cranial and spinal areas, that protons produce superior dose distributions over both external beam and IMRT plans."

The American Society for Therapeutic Radiology and Oncology is the largest radiation oncology society in the world, with more than 7,500 members who specialize in treating patients with radiation therapies. As a leading organization in radiation oncology, biology and physics, the Society's mission is to advance the practice of radiation oncology by promoting excellence in patient care, providing opportunities for educational and professional development, promoting research and disseminating research results and

representing radiation oncology in a rapidly evolving socioeconomic healthcare environment.

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