PROTON THERAPY LITERATURE

In the treatment of cancer, high doses of radiation are used to destroy cancer cells by damaging their DNA. When the DNA of a cancer cell is destroyed beyond repair, the cell dies and is then eliminated by the body through natural processes.

Proton therapy is an advanced form of radiation treatment that has been used to treat more than 160,000 people worldwide. By 2030, it is estimated that between 300,000 and 600,000 patients will have received proton therapy treatment.

The following are research studies published between 2016 and 2019 that underscore the benefits of proton therapy for certain cancer patients. The majority of the studies employ pencil beam scanning, the most precise form of proton therapy.

PROTON THERAPY


Bright SJ, Flint DB, Chakraborty, et. al. Non-homologous end joining is more important than proton linear energy transfer in dictating cell death. Int J Radiat Oncol Biol Phys. 2019 Aug 16


GYNECOLOGIC CANCER


HEAD, NECK, AND SKULL-BASE


Giantsoudi D, Adams J, MacDonald S, Paganetti H. Can differences in linear energy transfer and thus relative biological effectiveness compromise the dosimetric advantage of intensity-modulated proton therapy as compared to passively scattered proton therapy? Acta Oncol. 2018 Sep;57(9):1259-1264.


**LIVER**


LUNG


LYMPHOMA


PANCREAS


PEDIATRICS


Hashimoto T, Shimizu S, et. al. **Clinical experience of craniospinal intensity-modulated spot-scanning proton therapy using large fields for central nervous system medulloblastomas and germ cell tumors in children, adolescents, and young adults.** J Radiation Res. 2019 May 21; pii: rrz022.


**PROSTATE**


**RECTAL**
SPINAL CORD


PROTON THERAPY AND IMMUNOTHERAPY


UPPER GASTROINTESTINAL