

Proton Therapy – Medical Procedure in Oncological Therapy

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Abstract

The paper presents proton therapy as a method of treating cancer, the action of proton therapy, the proton as a subatomic particle that can be controlled to obtain and deliver radiation directed to tumors and radioactivity. A comparison is made between proton therapy and X-ray radiation, pencil beam scanning technology is presented, treatment with proton therapy, advantages and disadvantages of proton therapy and it finishes with a conclusion and a bibliography.

Keywords: proton therapy, radioactivity, proton, medical procedure, cancer

Introduction - History of Proton Therapy

British physicist Ernest Rutherford demonstrated the existence of protons in 1919 and physicist Robert Wilson proposed protons to be used to deliver an increased dose of radiation to a tumour, simultaneously reducing the exposure of surrounding healthy tissue to radiation in 1946. The first research studies were conducted on patients in the US and Europe. Advances in imaging technology, including CT, MRI and PET scans, helped researchers better diagnose and detect tumors, making proton therapy a more practical treatment option in the 1980s. The first patient received proton treatment more than 50 years ago, and the US Food and Drug Administration approved proton therapy as a radiation treatment option in 1988. To date, more than 180,000 people worldwide have received proton therapy at cancer centres in Europe, Asia and the United States.

Advances in imaging, CT, MRI and PET scans now allow doctors to pinpoint and precisely define the location, size and shape of tumours. This capability, combined with improvements in proton technology, has led to today's increased interest in proton therapy as an important treatment option for cancer. Worldwide, there are approximately 30 centres where nearly 70,000 patients have been successfully treated. The goal of research in this area is to develop smaller,