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B dot Medical to develop ultra-compact proton cancer therapy

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B dot Medical will continue to contribute in the fight against cancer through the development of proton cancer therapy and other pioneering cancer therapy systems.



Japan based B dot Medical Inc. has announced that the company has initiated the development of an ultra-compact proton cancer therapy system that can replace the commonly used x-ray cancer therapy system (LINAC).

More than 180,000 patients have been treated in proton therapy over the years. The use of proton cancer therapy became applicable for health insurance in Japan for pediatric cancer in 2016, followed by prostate cancer, head and neck cancer, and bone and soft tissue tumors in 2018. The number of patients that receive proton cancer therapy is expected to continue increasing. However, proton cancer therapy systems are very large, needing a dedicated building for installation, and therefore making its implementation very expensive and a large-scale project.

Conventionally, a rotating gantry is used in order to irradiate from a desired angle. However, its rotating mechanism is very large and complex, making current proton cancer therapy systems large and therefore requiring dedicated buildings. B dot Medical has devised a non-rotating gantry which can bend the proton beam without requiring a rotating mechanism. This non-rotating gantry, which uses a superconducting magnet as a bending magnet, the form of which was also optimized, allows the system to be significantly downsized. The new ultra-compact proton cancer therapy system is not only easy to install in hospitals new to proton cancer therapy, but will be installable in the space of the commonly used x-ray cancer therapy system. By this, B dot Medical aims to develop a proton cancer therapy system that is easy to introduce to many hospitals.

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Proton cancer therapy is a high-precision radiation therapy. The proton (hydrogen atomic nucleus) is accelerated to up to 60% of light speed, delivered to the treatment room and is used to irradiate affected areas to kill cancer cells. Proton therapy is expected to be highly effective, with the ability to concentrate the beam on the target, keeping the irradiation of surrounding normal tissues limited.