others

Current Status of Xiamen Humanity Hospital BNCT Center

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The Xiamen Humanity Hospital (XHH) BNCT Center represents a landmark in the evolution of accelerator-based Boron Neutron Capture Therapy (AB-BNCT) within China and globally. As the inaugural AB-BNCT facility operating within the nation, XHH also holds the distinction of being the first to administer human irradiation outside of Japan. Established in 2018 and achieving groundbreaking status in 2019, the center successfully generated its first neutron beam in 2021, culminating in the initiation of human irradiation trials in 2022.

The center utilizes the NeuPex AB-BNCT system, an innovative solution developed by Neuboron Medical Group. The system integrates an accelerator derived from the BINP VITA technology and is complemented by a stationary solid lithium target. Leveraging a proprietary Beam Shaping Assembly (BSA), NeuPex is capable of delivering an epithermal neutron flux exceeding 1×10^9 n cm^{-2} s^{-1} with a proton beam energy of 2.35 MeV and current of 10 mA. This translates to an exceptional neutron conversion efficiency exceeding 5×10^7 n cm^{-2} s^{-1} kW^{-1}, setting a new standard for efficiency in neutron generation for therapeutic purposes.

Clinical deployment commenced on October 9, 2022, under the aegis of an Institutional Review Board-approved study at XHH. Over the subsequent six months, the center administered therapy to 14 patients via 18 irradiation sessions. Boron carriers Neuboron NBB-001 (also known as BPA) and NBB-002 (^{18}F-BPA) were employed for treatment and patient screening. Treatment planning was meticulously orchestrated using the NeuMANTA Treatment Planning System (TPS) in conjunction with the Monte Carlo-based dose engine, COMPASS.

The NeuPex system has gained entry into the Green Channel of the National Medical Products Administration (NMPA) of China and is currently undergoing medical device registration testing. Anticipated to commence official Phase I trials by the second quarter of 2023, further insights into the technological and clinical milestones will be elaborated upon during the presentation.