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Experience in proton therapy with beam energy 1000 MeV

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Korytova L.I.1, Vinogradova Y.N.1, Korytov O.V.1, Yalynich N.N.1, Gerasimov S.V.1, Kartashov A.V.1, Shalek R.A.1, Maksimov V.I.2, Ivanov E.M.2, Karlin D.L2, Khalikov A.I.2
1. Russian Scientific Center of Radiology and Surgical Technologies n.a. A.M. Granov, St-Petersburg, phone (812) 596-84-62 e-mail: info@rrcrst.ru
2. Petersburg Institute of Nuclear Physics n.a. B.P. Konstantinov, NRC Kurchatov institute, Gatchina, phone (81371) 4-60-25 e-mail: dir@pnpi.nrcki.ru

This lecture will provide the participants with information about current status of proton therapy in RSCRST, which cooperates with PINP over use of proton beam for treating patients. Participants will receive knowledge about "Gatchina method"of treating intracranial targets with proton beam 1 GeV. This method of proton therapy is different from typical irradiation technique, which uses Bragg peak. "Fly through"system is based upon patient rotation at the procedure table with fixed position of proton beam.
Effectiveness and safety of this method was proven by fundamental preclinical research, involving cell cultures, drosophila melanogaster, transplanted tumors and different experimental animals.
Patient treatment had began in 1975, and by present time 1394 patients had underwent proton beam therapy –almost 26% of all patients, which were treated by proton beam therapy in Russian Federation, and 2% of patients worldwide.
As by the date, after modernization proton beam is undergoing certification as medical equipment "stereotactic proton beam therapeutic station". Fundamental, preclinical and scientific research is also underway in an attempt to highlight further ways to further modify element base and software to expand possible applications for "Gatchina method"in treating oncological patients with differently localized tumors of all possible etiology.
The second part of the lecture includes information on the cyclotron C-80 launched with the energy of the extracted proton beam from 40 to 80 MeV and a variable intensity of up to 100 μA and a new project of the onco-ophthalmologic complex of proton beam therapy on its basis. The work is carried out jointly with ITEP, Moscow.

Primary author: KORYTOV, Oleg (RSCRST)