Occupational and public exposures in RIT of brain tumors in Cuba

Z.H. Amador Balbona, F.E. Ayra Pardo and M.B. Torres Berdeguez
Isotope Center, Ave. Monumental y carretera La Rada, Km 31/2, 9 Havana, Cuba
zabalbona@centis.edu.cu

The first phase of the clinical trial using the humanized monoclonal antibody h-R3 labeled with 188Re, for radioimmunotherapy (RIT) of brain tumors began in the Republic of Cuba in 2002. This monoclonal antibody was obtained in the country and it is required to evaluate its toxicity, biodistribution and internal radiation dosimetry. Five groups of three patients of each one with an administered activity from 0.37GBq to 1.1GBq, are considered. The aim of this work is to analyze the results related to the radiological surveillance during this research and to compare these with projected doses. Exposure assessment is done by each activity level, operation and total quantity of patients. It is considered the radioactive decay of 188Re and supposed that only one person executed all of the operations. It is demonstrated that individual doses are acceptable and lower than world average effective annual dose of natural radiation background (2.4mSv), because for the operations of more risk are used individual protection means. Nevertheless, it is identified that nurses are the most exposed. The projected maximum equivalent dose to hands is about 3mSv and it belongs to the neurosurgeon. Radiological surveillance is performed to verify our calculations. Five workers and public (four individuals) are monitoring for twelve cases, with direct reading dosimeters DOSICARD and TLD. The conservative assumptions in the dose assessment and the compliance with established safety procedures determine that the registered doses are lower than those were projected. RIT with 188Re for high-grade astrocytomas is a safety practice from radiation protection point of view.

Article published by EDP Sciences and available at http://www.radioprotection.org
or http://dx.doi.org/10.1051/radiopro:2008523