A Radiation Therapy Incident Arising from Human Error

Summary of findings:

A report of an incident of misadministration of radiation to a patient under radiation therapy was received in October 2006. While the consequence of the radiation dose to the patient arising from the misadministration was judged to be of little clinical significance by the attending doctor, the development of the incident was an indication of the presence of inadequacies in the quality assurance programme, which allowed human errors to propagate unchecked. The licensee responsible for the incident has taken action to implement suitable improvements on its quality assurance programme in radiation therapy operations.

Summary of incident:

A patient was prescribed for radiation therapy treatment for meningioma at the concerned radiotherapy centre. A treatment plan based on “Intensity Modulation Radiation Therapy” technique at a prescribed dose of 54Gy in 30 fractions over a 6 weeks’ period starting in September 2006 was set up for the patient.

On the day the patient was given the 28th fraction of the treatment in October 2006, the patient was set up in the usual way with the correct head cast. However, the radiation treatment plan of a different patient with a similar name who had nasopharyngeal carcinoma was retrieved at the computerized treatment system console. Without the name double-checked at the console by a second technologist, the patient was treated with the plan of the other patient. The error was recognized and the treatment fraction was interdicted only late into the treatment session.

When the misadministration occurred, the radiation beam was directed towards the planned isocenter for the treatment within the brain of the patient. However, because a wrong treatment plan was used, a wrong radiation dose distribution was delivered to the treatment target volume. The wrongly delivered radiation dose was assessed and the dose distribution in the brain studied. The consequence of the radiation dose to the patient arising from the misadministration, according to the attending doctor, was of little clinical significance. The patient was informed of the mistake by the attending doctor and agreed to continue with the rest of the prescribed treatment.

Action required:

Notwithstanding the fact that human error was identified as the immediate cause of the incident, the root cause should have been inadequacies in the quality assurance programme in radiation therapy. The Licensee has actively reviewed its quality assurance programme in radiation therapy, including the working procedures.

All Licensees who are permitted to possess and use therapeutic irradiating apparatuses for radiation therapy purposes are reminded to implement appropriate quality assurance programmes according to the requirements of WHO, IAEA and ICRP and conduct regular reviews of the programme to prevent systematic errors and minimize the frequency and size of random errors.
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28 February 2007

1 Quality Assurance in Radiotherapy, World Health Organization, Geneva, Switzerland, 1988


3 Design and Implementation of a Radiotherapy Programme: Clinical, Medical Physics, Radiation Protection and Safety Aspects [IAEA Tecdoc 1040, 1998]