AbstractID: 10244 Title: Clinical Application of the DAVID System and 2D-ARRAY for Quality Assurance in IMRT Treatments

Purpose:

A complete IMRT QA program based on a combination of the 2D-ARRAY and the DAVID system (both PTW-Freiburg, Germany) is implemented in our clinic to verify all IMRT deliveries.

Method and Materials:

The program consists of three different steps: A constancy check with the 2D-ARRAY to check to the stability of dose output, energy, beam flatness and symmetry as well as MLC calibration. A pre-treatment IMRT plan verification using the 2D-ARRAY and a mechanical gantry mount system to compare planned and measured dose distributions. In parallel to this step, reference values for the DAVID system are measured. The final step is daily *in-vivo* dosimetry in which the measured values of the DAVID system are compared with reference values.

Results:

The daily QA using the 2D-ARRAY allows the acquisition of the most important machine parameters within one measurement. The combination of the gantry mount and the 2D-ARRAY allows convenient dosimetric verification with minimum workload. The DAVID system closes the loop by securing the daily monitoring of the IMRT plan delivery. The results collected can be analyzed at regular intervals, errors can be identified and corrected before the next fraction if necessary. With the combination of the 2D-ARRAY and the DAVID system it is possible to identify deviations in the machine parameters and their impacts on the quality of the treatment.

Conclusion:

The QA program covers the whole treatment process from dosimetric plan verification to daily verification of the treatment delivery. This enables us to detect any discrepancies that would occur before and also during the treatment. The DAVID system is used regularly in our clinic to verify the daily treatment delivery and has been shown to be a convenient and fast tool to pin-point errors occurred during each fraction.

Conflict of Interest:

This work was performed in cooperation with PTW-Freiburg.