AbstractID: 8205 Title: Application of IMRT for the treatment of medulloblastoma

Cranio-spinal radiation has a proven role in many pediatric malignancies. Classically, the cranio-spinal axis is treated using two lateral fields for the brain and a matching posterior field for the spine. This technique, requires that the matching plane between the cranial and spinal fields be moved every few treatments, so as to avoid any hot or cold spots. Additionally, a significant dose can be given to the kidneys, heart, and thyroid. We propose the use of IMRT to treat the spine axis in order to reduce toxicity in these patients. The patient was placed in the prone position using an aquaplast mask as an immobilization device. A CT of the head and spine was acquired in the treatment position. Organs at risk and GTV were outlined and a planning target volume (PTV) was constructed by expansion of the GTV. Seven coplanar fields were designed around the patient's anatomy. IMRT software used was Pinnacle IMRT from ADAC Laboratories. A downhill gradient technique was used to find an optimal solution. The optimal solution was converted using the K-mean Clustering algorithm using a 2% error tolerance after filtering the intensity map to remove any steep intensity gradients. Prescribed dose was 36 Gy (uniform dose) to the PTV. Dose volume histograms were generated for all regions that were contoured. For comparison purposes a conventional plan was also planned for the same patient.
IMRT can reduce the dose to the kidneys and thyroid gland and as a result the incidence of clinical and sub-clinical hypothyroidism.