

**Purpose:** To evaluate the dose conformity and feasibility of whole brain radiotherapy with a simultaneous integrated boost by forward intensity-modulated radiation therapy in patients with 1-3 brain metastases.

**Methods:** Forward intensity-modulated radiation therapy plans were generated for 10 patients with 1-3 brain metastases on Pinnacle 6.2 Treatment Planning System. The prescribed dose was 30Gy to the whole brain (PTVwb) , 40Gy to individual brain metastases (PTVboost) simultaneously, both doses were given in 10 fractions. The maximum diameters of individual brain metastases ranged from 1.6 to 6 cm , and the summated PTVboost per patient ranged from 1.62 to 69.81 cc . Conformity and feasibility were evaluated and compared with those reported in the literature which had been planned by helical tomotherapy, regarding conformity number (CN) and treatment delivery time.

**Results:** One hundred percent volume of PTVboost received at least 95% of the prescribed dose in all cases. The maximum dose was less than 110% of the prescribed dose to PTVboost . And all of the hot spots were within PTVboost . The volume of PTVwb received at least 95% of the prescribed dose ranged from 99.2% to 100%. The mean values of CN were 0.682. The mean treatment delivery time was 2.79 minutes. Ten beams were used on average in these plans.

**Conclusions:** Whole brain radiotherapy with a simultaneous integrated boost by forward IMRT for patients with 1-3 brain metastases is feasible. Dose conformity was comparable to those planned by helical tomotherapy in the literature and treatment delivery time was shorter.