

## Comparative Analysis of Intensity Modulated Inverse Planning Modules of Four Commercial Radiation Treatment Planning Systems Applied to Prostate

**【Purpose】** Treatment planning system equipped with IMRT is sold by multiple agencies as of now. Four treatment planning systems have been introduced to our hospital. Therefore, we have reviewed whether there is any difference between plans and dose verifications which were obtained by calculation using each treatment planning system.

**【Methods】** We used NovalisTx 15X as medical linear accelerator and Eclipse(VARIAN), Pinnacle(PHILIPS), XiO(ELEKTA) and iPlan(BrainLAB) as treatment planning system respectively. Subjects were 15 cases for which prostate IMRT was adopted in our hospital. Farmer-type docimeter was used for I.C. in absolute dose verification. RTQA2 was used in relative dose verification. Measured cross-section was coronal section and sagittal section in isocenter (I.C.).

**【Results】** The treatment planning was possible to meet our dose constraint. The results of absolute dose verification by Eclipse, Pinnacle, XiO and iplan were  $0.37\pm 0.53\%$ ,  $0.70\pm 0.72\%$ ,  $0.48\pm 0.41\%$  and  $0.2\pm 0.2\%$  (Fig.1). The results of relative dose verification for coronal section were  $98.33\pm 0.7\%$ ,  $96.74\pm 0.97\%$ ,  $96.72\pm 0.71\%$  and  $96.43\pm 0.88\%$ , and for sagittal section were  $97.85\pm 1.46\%$ ,  $96.63\pm 1.43\%$ ,  $95.72\pm 1.68\%$  and  $95.84\pm 0.8\%$  (Fig.2).

**【Conclusion】** The planning and verification results for each treatment planning system were both almost satisfactory.

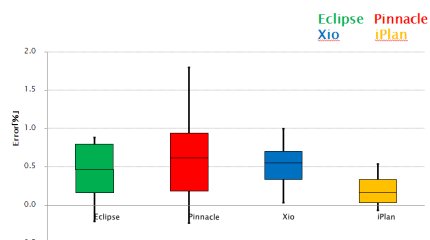


Fig.2; Dissymmetric error measured by use of ionization chamber in the fifteen cases of prostate IMRT.

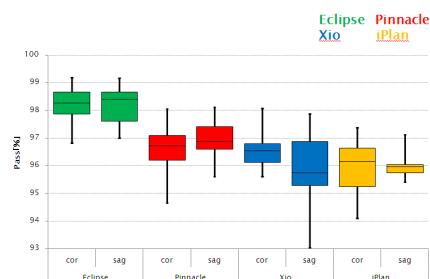


Fig.3; The results of gamma analysis (DTA: 3 mm, DD: 3%) in the fifteen cases of prostate IMRT.