

IS DUAL-PHASE IMRT REQUIRED FOR THE PATIENT OF HEAD AND NECK CANCER WITH ENLARGED CERVICAL LYMPH NODES?

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Purpose : To discuss the differences of dose distribution between the dual-phase IMRT and one-phase IMRT in the patients of head-and-neck (H&N) cancers with enlarged cervical lymph nodes .

Materials and Methods : From April 2003 to June 2004, we collected 6 patients of H&N cancers with enlarged cervical lymph nodes. Initially, we arranged first simulation by CT-MRI fusion for one-phase IMRT and prescribed 4500 cGy on GTV including enlarged lymph nodes (Plan A). Five weeks later, we arranged the second simulation by the same method to design dual-phase IMRT and prescribed 2700 cGy on GTV (Plan B). All 6 patients received concurrent chemoradiotherapy (CCRT) with cisplatin 30 mg/wk intravenously. The IMRT technique was simultaneous intensity boost (SIB). Furthermore, we combined two CT images and superimposed the fluence map of Plan A onto the second CT images to get the Plan C. Finally, we compared Plan B with Plan C.

Result : When we compared two CT images, we found that those enlarged lymph nodes already regressed or disappeared after plan A treatment, which made the skin and parotid gland fall into the high dose area. From the comparison of both plans, B had a much better conformal index than C for CTV. Using t test to analyze the $D_{50\%}$, $D_{30\%}$ and D_{mean} of Plan B and C for the sparing of parotid glands, B had better results than C ($p < 0.001$). Therefore, the dual-phase IMRT treatment planning can provide another way to significantly decrease the irradiation doses to parotid glands.

Conclusion : This study indicate that if the patient's contour changes without modifying the prior IMRT treatment planning, the doses of parotid glands and the skin will increase and the conformity of dose distribution will decrease, which affect the result of IMRT.

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