Invited Lecture

Brachytherapy for the Head and Neck Cancer

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3 dimensional (3D) radiation therapy for localized tumor has become popular. However, movement of the tumor is the important problem for the 3D external beam therapy. In brachytherapy radio-isotopes are inserted into the tumor and moves synchronously to the movement of the tumor. Brachytherapy is the 4D (3D+time) treatment. However, radiation exposure for the medical staffs is the most important problem for brachytherapy.

The retrospective study to compare the treatment results of the Ra-226 needles and Ir-192 hair-pins showed the same local control rates for the oral tongue cancer. Ra-226 needles were replaced to the Cs-137 needles. However, we stopped to use the Cs-137 needles from 1991, because of the low radiation exposure to the medical staffs using Ir-192 hair-pins.

From 1991, high dose rate (HDR) interstitial brachytherapy (ISBT) system named microSelectron-HDR was installed. This system is the remotely controlled system and allows complete elimination of radiation exposure for the medical staffs. We carried out the Phase I/II study of the HDR-ISBT for the oral cancer. 60Gy in 10 fractions (2 fractions a day) was decided as the standard treatment dose for the oral cancer when using HDR-ISFT. We started the prospective randomized study to compare the HDR-ISBT versus low dose rate (LDR) ISBT using Ir-192 hair-pins (70Gy/4−9 days) for oral tongue cancer. The treatment results of the HDR-ISBT were the same as those of the LDR-ISBT. From Sept 1996, we stopped to use Ir-192 hair-pins.

There are many new radiation techniques such as IMRT (Intensity modulated radiotherapy), particle therapy (proton or carbon beams), Liniac-surgery, CyberKnife and so on. Brachytherapy has a long history and it has an advantage of the 4D treatment.