CASE REPORT

4 Gy single fraction palliative radiotherapy for the treatment of painful recurrent soft plate carcinoma by high-dose-rate mold brachytherapy: A case report

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Summary We herein report a case of the effectiveness of 4 Gy single fraction high-dose-rate mold brachytherapy in the palliative treatment of a painful recurrent soft palate carcinoma in a previously irradiated field. A 73-year-old man with a painful recurrent squamous cell carcinoma in the right soft palate in a previously irradiated field was treated with high-dose-rate mold brachytherapy. Although only 4 Gy could be delivered, the patient showed a reduction in the degree of pain in the right soft palate after the treatment. Unfortunately, the patient died of interrecurrent disease with pleural metastases five months after the brachytherapy.

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KEYWORDS
Recurrent oropharyngeal cancer;
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Pain relief

The occurrence of a second head and neck cancer is estimated to be approximately 20–40%. During the follow-up of patients who have undergone treatment for head and neck cancer, the early diagnosis of a recurrent tumor is relatively easy, but the choices of treatment for such patients tend to be limited. Curative surgery is often not possible due to the extent of tumor spread and the patient’s overall condition. A radical course of external beam radiotherapy in a previously irradiated area is not possible without causing excessive morbidity. The available techniques for re-irradiation with high dose include afterloading iridium 192 implants, which is a limited treatment with minimal radiation to the surrounding normal tissue. Peiffert et al. 3
reported 73 patients with recurrent velotonsillar carcinomas treated using this approach. Recently, a less invasive technique combining a mold and a remote afterloading unit with an iridium 192 microsource has been used for the treatment of superficial oral carcinoma. However as far as could be ascertained, there have been few reports about the use of mold techniques for the palliative salvage irradiation of recurrent oropharyngeal cancer.

The purpose of this clinical report is to present the use of 4 Gy single fraction high-dose-rate mold brachytherapy in the palliative management of painful recurrent soft palate carcinoma in a previously irradiated field.

Case report

In April 2000, a 73-year-old man, who had a complained of pain in his right soft palate demonstrated a tumoral lesion that measured 25 × 20 mm. The findings of a histopathologic examination of the specimen were consistent with well-differentiated squamous cell carcinoma. The patients was staged as T2N0M0 (UICC-TNM, 1997) cancer of the right soft palate and was referred to our department in order to undergo primary radiation therapy. External beam irradiation (60 Gy/30 fractions/45 days) was performed with a 4 MV beam by opposed lateral portals. The tumor disappeared macroscopically after the treatment. In August 2000, he presented with a recurrent carcinoma in the right soft palate in a previously irradiated field, he was retreated with external beam irradiation (30 Gy/15 fractions/23 days) with a 4 MV beam by opposed lateral portals. After treatment, no change in tumor size was observed afterwards. In March 2001, the patient was referred to our department for a work up because of soft palate pain. He presented with tumor regrowth in the right soft palate in a previously irradiated field, and the computed tomography (CT) showed painless multiple bone metastases. It was decided by the medical team that chemotherapy was contraindicated because of renal failure and he also rejected morphine pharmaceutical use because of severe vomiting. As a result, high-dose-rate mold radiotherapy with Microselectron-HDR (Nucletron, Veenendaal, The Netherlands) was employed in order to administer palliative radiotherapy at a site of recurrent right soft palate carcinoma in a previously irradiated field. A dental mold was made of resin to fit the jaw, and then four flexible afterloading tubes, which were approximately 10 mm apart from one another, which were located about 5 mm away from the mold surface, were laid parallel to cover the tumor area (Fig. 1). Next, the mold was thickened to minimize radiation to the tongue and the mandible. The dose distribution was calculated to obtain a reference dose of 4 Gy at the mold surface, which was then attached to the tumor. Although a total dose of 12 Gy was intended to be delivered by high-dose-rate mold radiotherapy three times in just one week, only 4 Gy could be delivered just one time because of the patients condition. Thereafter the tumor did not increased in size and the patient showed a reduction of the pain in the right soft palate region and demonstrated an improved eating ability after the treatment. No medication was prescribed for pain during and following treatment. However, the patient later experienced dyspnea due to pleural effusion in the fourth month of follow-up. Thereafter his condition gradually deteriorated and he eventually died of interrecurrent disease with pleural metastases five months after undergoing the brachytherapy.

Discussion

First primary head and neck tumors are generally treated by radiotherapy or surgery. When patients are treated with external beam irradiation for a cancer of the upper aerodigestive tract, because of its fairly central location, the oropharynx is almost always included in the treatment volume for the oral cavity, pharynx, and larynx carcinomas. In addition, the minimum dose delivered to this volume tend to usually be over 50 Gy. The re-irradiation of an infield second primary tumor or recurrent tumor with optimum dose external beam irradiation with a curative intent is not possible without causing excessive morbidity. In contrast, brachytherapy tends to be well tolerated. This can be explained by the small target volume and the modalities of treatment, and the systematical use of mandibular lead shielding to avoid osteoradionecrosis. Some investigators recommended brachytherapy for treatment of early second primary tumors of the velotonsillar area, which develop in a previously radiated area. Recently, a less invasive technique combining a mold and a remote afterloading unit with a iridium 192 microsource has been used in a superficial oral carcinoma. There have been some reports in the literature on the use of high-dose-rate mold brachytherapy combined with or without external beam therapy. These reports seemed to indicate that high-dose-rate mold brachytherapy alone may be useful for the management of early stage cancers with a satisfactory control.

In this case, although the recurrence locus was not a superficial oral carcinoma, we presumed that less invasive high-dose-rate mold brachytherapy may nevertheless be effective in not only the early stage of oropharyngeal can-
cer, but also for the palliative management of recurrent cancer in a previously irradiated field. Peiffert et al. reported that 60 Gy by brachytherapy alone is the optimal treatment for patients presenting with velotonsillar carcinoma in a previously irradiated field. We therefore planned a dose of mold therapy, which was regarded to be similar to brachytherapy, however, the patient was irradiated with 60 Gy in the first treatment time and with 30 Gy at the first time of recurrence point, therefore a total dose of 12 Gy was intended to be delivered by high-dose-rate mold brachytherapy three times for just one week. However, because of the patient’s condition, only 4 Gy could be delivered at one time. In the fifth month of the follow-up after mold therapy, even though the tumor had not decreased in size, the patient demonstrated a decrease of the pain in the right soft palate after the treatment and the patient’s quality of life was thus considered to have improved.

For the palliation of metastatic bone pain for at least 12 months, a single fraction of 8 Gy is reported to be a safe and effective multifraction regimen. In this case, a 4 Gy single fraction high-dose-rate mold brachytherapy may be effective for a painful recurrent soft palate tumor in a previously irradiated area.

Based on the above findings, the use of mold therapy was thus considered to be appropriate for the palliation of painful recurrent cancer because it is noninvasive and the therapy had short duration. There are still too few cases that have been treated by this therapy for the management of a painful recurrent cancer in a previously irradiated field by a 4 Gy single fraction high-dose-rate mold brachytherapy for any definitive conclusion to be made. Therefore more patients should be treated to determine the safety, effectiveness, the optimal dose and fractionation of this therapy.

Conflict of interest
I have no conflicts or financial support.

References