patients is very low. To decrease the pain level and to increase QL, hemibody irradiation (HBI) is performed.
Purpose: Evaluation of the frequency and intensity of early adverse reactions after HBI.
Material and Methods: Material was comprised of 59 patients (30 females, 29 males), aged from 37 to 80 (mean 59) with painful, multiple bone dissemination, irradiated for half of the body. Most frequent clinical diagnoses were prostate (22) and breast (26) cancers. Most frequent pathological diagnosis was adenocarcinoma (49). 26 patients were irradiated (6 Gy) for upper (UHBI), 26 (8 Gy) for lower (LHBI) and 7 (6 or 8 Gy) for middle (MHBI) part of the body. All patients in treatment day got 500 ml of intravenous fluid, metoclopramid i. m. and dexaven i. v. 2 weeks after HBI nausea and vomiting, diarrhea, skin changes, leuco and thrombocytopenia were evaluated in 5 degrees scale different for each symptom (from 0 [lack of symptom] to 4 [very intense]). Patient's weight was measured in the treatment day and 2 weeks later. Statistical analysis based on Spearman and Mann-Whitney tests was performed.
Results: Nausea and vomiting appeared in 31, diarrhea in 14, leucopenia in 18 and trombocythopenia in 7 cases. Means of intensity were 0.9, 0.34, 0.47, 0.31 respectively. Only in one case 4 degree reaction appeared (trombocythopenia <25000/mm^3). In 3 cases delicate skin erythema appeared. Average weight in the treatment day was 69.6 kg and 67.7 kg 2 weeks later. Significant correlation between diarrhea intensity and delivered dose was found (R = 0.31). Significant differences between nausea and vomiting intensity after U (mean 1.2) and LHBI (mean 0.5) (p = 0.01) and diarrhea intensity after U (mean 0.008) and LHBI (mean 0.5) (p = 0.02) were found.
Conclusion: Adverse reactions after HBI are on the acceptable level. Diarrhea depends on delivered dose and is more frequent after LHBI and nausea and vomiting appear more frequently after UHBI.

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Dose evaluation of elective nodal region of head and neck cancer in conventional radiation therapy – How much elective nodal region should be included in IMRT?

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Background: To evaluate the irradiated dose of elective nodal region which is recommended in IMRT for head and neck cancers in conventional radiation therapy.
Materials and Methods: In this analysis, 20 patients with head and neck cancers who recievwd conventional radiation therapy at Kagawa University were enrolled (6 patients with laryngeal cancers, 7 with oropharyngeal cancers and 7 with hypopharyngeal cancers). The follow-up at the time of evaluation ranged from 2 to 36 months (median 7 months). We delineated elective nodal region (Level I-V, retropharyngeal space; RP) with guideline 1) in each patients retrospectively, and calculated V50, 80, 95, and D95. We referred to the report of Chao 2) for the extent of elective nodal region. The dose of elective nodal irradiation was 40 to 50Gy in conventional fractionation. All patients were administrated concurrent chemotherapy.
Results: The table shows V95 in each elective nodal region. Though level II and III were involved in irradiated fields in all patients, the dose was low in many patients. Especially, level IV tended to be out of the irradiated fields in the patients with laryngeal and oropharyngeal cancers, and therefore the dose of level IV was especially low. We did not observe any nodal recurrence except in three patients who were performed nodal dissection after radiation therapy as scheduled.

V95 (%)	Ib	IIa	IIb	III	IV	V	RP
Laryngeal		68.3	42.0	93.5	20.3		
Oropharyngeal	84.6	98.9	78.0	78.7	43.4	44.8	85.0
Hypopharyngeal	75.5	88.1	59.3	93.6	70.6		69.7

Conclusions: In conventional radiation therapy, we observed low dose region even in nodal regions which seemed irradiated, and therefore improvement of the dose distribution in IMRT is needed. On the other hand, although the follow up period was short, we did not observe any nodal recurrence in most of the patients and the influence of chemotherapy was considered to be great. We have to discuss how much elective nodal region should be included in IMRT for patients with head and neck cancers who recieve chemotherapy.

References

[1] Gregoire V, et al. Radiother Oncol 2003; 69: 227−36.
[2] Chao KS, et al. Int J Radiat Oncol Phys 2002; 53: 1174−84.

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Survival after radiotherapy of metastatic spinal cord compression

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Background: Prognostic factors predicting for survival of metastatic spinal cord compression (MSCC) patients would be helpful to facilitate the selection of an appropriate radiotherapy (RT) schedule (shorter-course vs. longer-course RT) for the individual patient. This study investigated the prognostic factors and overall survival after radiotherapy for MSCC.
Materials and Methods: In this retrospective analysis, 90 patients irradiated for MSCC between January 1, 1998 and December 31, 2006. Inclusion criteria were confirmation of MSCC by magnetic resonance imaging (MRI). Of the entire cohort, 61 patients (68%) were male and 31 (32%) were female. Median age was 62 years (range 23−82 years). Type of primary tumor was 15 lung, 13 prostate, 14 breast, 7 unknown primary and 38 others. Pain was the earliest symptom of SCC in the majority of patients, being present before neurological signs in 71%.
Radiotherapy was performed with 6−15 MV linear accelerators in 63 patients and 60Co machines in 27 patients.
The prognostic factors investigated were age, sex, location of primary tumor, involved vertebra, other bone metastases, visceral metastases, and pretreatment performance status.
Multivariate analysis was performed using Cox regression analysis. Survival was calculated using the Kaplan-Meier method.
Results: The overall median survival was 121 days (range 6–1219 days). Among the 90 patients, 48 (53%) died within 6 months after RT and 60 (60%) died within 12 months after RT. Comparing survival and location of primary tumor, we found a median survival time of 6, 7 and 4 months for prostate, breast and lung carcinomas, respectively. The number of involved vertebra is a prognostic factor (p = 0.012). Also, the age and location of primary tumor has a slightly trend (p = 0.057 and p = 0.90, respectively); while, the sex, other bone metastases, visceral metastases, and pretreatment performance status was not statistically significant.
Conclusions: Prognostic factors predicting for survival of MSCC would be helpful to facilitate the selection of an appropriate RT schedule for the individual patient. In this study, survival only was associated with number of involved vertebra. For patients with a very poor expected survival (lung carcinoma) or few number of involved vertebra, shorter course appear appropriate because they are associated with less discomfort for the patients.

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Single-dose radiotherapy in the treatment of heterotopic ossification in patients with spinal cord injury: results of a prospective study

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Background: Heterotopic ossification is a common complication in spinal cord injury, characterized by the formation of ectopic bone in soft tissue surrounding peripheral joints. Heterotopic ossification always occurs below the level of the spinal cord injury, most commonly at the hip. It may cause a severe reduction of hip joint movement and lead to loss of sitting position, pressure sores, and also compromise activities of daily living. The aim of our prospective study was to evaluate the efficacy of radiation therapy for the treatment of heterotopic ossifications in the hips in spinal cord injured patients.
Patients and Methods: Between 4/2000 and 9/2006, 13 spinal cord injured men (median age 34.9 years) with heterotopic ossifications in the hips who underwent primary rehabilitation received radiotherapy at the Department of Therapeutic Radiology and Oncology Graz, Austria. The mechanisms of injury were: motor-vehicle accident (n = 7), fall incidents (n = 3) and miscellaneous (n = 3). At the start of rehabilitation, Alkaline phosphatase was elevated in 10 patients, and in 9 men heterotopic ossification was verified on x-ray. In the remaining patients, elevation of Alkaline phosphatase as well as heterotopic ossification became evident during rehabilitation. After three-dimensional treatment planning, photon beam radiotherapy was delivered to the hips (unilateral, n = 2; bilateral, n = 11) with a single dose of 8 Gy. Six patients received additional non-steroidal anti-inflammatory drugs.