

LATE RECTAL BLEEDING AND GENITOURINARY MORBIDITY AFTER HIGH DOSE RATE BRACHYTHERAPY COMBINED WITH HYPOFRACTIONATED EXTERNAL BEAM RADIOTHERAPY FOR LOCALIZED PROSTATE CANCER

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Abstract: Purpose: To evaluate late rectal bleeding and genitourinary (GU) morbidity in patients consecutively treated with combined high-dose-rate (HDR) brachytherapy and external beam radiation therapy (EBRT). Materials and Methods: Data from 80 patients treated consecutively from October 2000 to May 2004 were analyzed. The median age was 69 years old, median follow-up 31 months, ranging from 17–59 months. All patients received endocrine therapy before radiation therapy. The patients were divided into low-, intermediate- and high-risk groups (4/24/52 patients) according to the risk factors defined by T-classification, PSA and Gleason score. Fractionation schedules for HDR brachytherapy were prospectively changed, and EBRT was fixed with 3 Gy fractions to 51 Gy. The distribution of fractionation was scheduled as follows; 5 Gy×5 times in 14 patients, 7 Gy×3 times in 19 patients, and 9 Gy×2 times in 47 patients. The rectal bleeding was graded using the toxicity criteria of the Radiation Therapy Oncology Group and European Organization for Research and Treatment of Cancer while the genitourinary morbidities were graded using the toxicity criteria of the Common Terminology Criteria for Adverse Events v.3.0.

Results: Grade 2 or worse rectal bleeding developed in 9 patients (11.3%) with the 2-year actuarial probability at 11.2%. Grade 2 and 3 rectal bleeding was recognized in 8 and 1 patients, respectively. Grade 3 morbidity developed in the biopsied sites that were performed in the other hospital. No significant difference was observed in any HDR brachytherapy fractionation schedule. Grade 2 or worse GU morbidities were recognized in 30 patients (37.5%), consisting of 29 Grade 2 patients and 1 Grade 3 patient. Twenty-one patients in Grade 2 morbidity had an increase in the frequency of urination or nocturia, and urethral strictures developed in 3 patients. The 3-year actuarial probability of urethral stricture was 6.0%. One patient experienced Grade 3 incontinent. No Grade 4 GU complications was observed.

Conclusion: HDR brachytherapy combined with hypofractionated EBRT for localized prostate cancer is feasible considering severity of late rectal and genitourinary morbidity.

Key words: late rectal bleeding and genitourinary morbidity, HDR brachytherapy, Hypofractionated EBRT, localized prostate cancer

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光子ビームにおける水等価固体ファントムを用いた水吸収線量の評価

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ABSORBED DOSE TO WATER REFERENCE DOSIMETRY USING VARIOUS
WATER-EQUIVALENT SOLID PHANTOMS IN HIGH-ENERGY PHOTON BEAMS

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Abstract: Most recent megavoltage dosimetry protocols (*e.g.*, the Japan Society of Medical Physics (JSMP) (JSMP-01), the American Association of Physicists in Medicine (AAPM) (TG-51), and the International Atomic Energy Agency (IAEA) (TRS-398)) have limited to the use of liquid water as a phantom material for reference dose measurements. This is because water is well-defined and reproducibly available compared to water-equivalent solid phantoms. This study presents methods to determine absorbed dose to water using ionization chambers calibrated in terms of absorbed dose to water but irradiated in solid phantoms. Achieving solid phantom measurements on an absolute basis has distinct advantages in verification measurements and quality assurance. We provide a depth scaling factor that transfers a depth in the solid phantom to a water equivalent depth and an ionization conversion factor (ionization ratio) that converts a chamber reading in the solid phantom to that in water. The absorbed dose to water under reference conditions can be obtained from the solid phantom measurements by using the two factors. We calculated the depth scaling factor for four solid phantoms (Solid Water RMI457, Tough Water WE211, RW3, and MixDP) for photon energies between 4 and 18 MV. The calculated average scaling factor for each phantom agreed within 1.5% compared with the relative electron density. For various Farmer-type cylindrical chambers, we also calculated and measured the ionization conversion factor for the four solid phantoms. The solid phantom measurements were performed at many hospitals. For RMI457 and WE211, the differences between measured and calculated factors varied between -0.5% and 0.7% with the average ionization conversion factor 0.3% lower than the calculation, whereas RW3 agreed within 0.5% after one phantom examination. Similarly, the differences for MixDP ranged from -0.2% to -1.5% with the average 1.0% lower than the calculation. The composition of commercial plastic phantoms and their homogeneity may not always be reproducible and consistent with assumed composition like MixDP used in this study. By comparing measured and calculated ionization conversion factors at the calibration depth, the findings of this study provide methods to verify the consistency of a given plastic for the purpose of clinical reference dosimetry.

Key words: Absorbed dose to water reference dosimetry, Plastic phantoms, Ionization conversion factor, Monte Carlo calculations

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アレルギー素因と乳癌放射線治療後の肺有害事象に関する検討 慢性好酸球性肺炎 (CEP) および特発性器質化肺炎 (COP) を含めて

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CORRELATION BETWEEN ATOPIC MANIFESTATION AND LUNG TOXICITY FOLLOWING CHEST IRRADIATION FOR BREAST CANCER

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Abstract: Purpose: To identify the impact of atopic manifestations on the occurrence of the lung toxicity following chest irradiation for breast cancer.

Patients and Methods: Collection of 1,173 patients who had undergone radiotherapy on their 1,177 chest walls or postsurgical mammary glands at 9 institutions including ours. They received treatment consecutively from December 1980 through October 2005, with which we formed the basis of this analysis. Patients with any of the following medical history were defined as having atopic manifestations (n=111): asthma, allergic rhinitis, atopic dermatitis, contact dermatitis, and allergy to food or drug. Of them, patients who were observed for at least 6 months or who suffered from lung toxicity at any time, were classified as Group A (n=85). On the other hand, patients in our institute who were observed for at least 6 months or who suffered from lung toxicity at any time regardless of atopic manifestations, were classified as Group B (n=113), and patients without any atopic manifestation were classified as Group C (n=92).

Results: Grade 3 or higher lung toxicity in NCI-CTCAE (v 3.0), occurred in 8.2%, *i.e.* 7 cases, of Group A, 2.7% of Group B, and 1.1% of Group C (p=0.0293 Group C against Group A). Three cases were classified as classical pneumonitis, and the other 4 sporadic pneumonitis such as Cryptogenic Organizing Pneumonia and Chronic Eosinophilic Pneumonia. Both of the histologically proven COP and CEP patients showed atopic manifestations in our institute. The detail clinical features are described in the main text.

Conclusion: Having atopic manifestations suggests that there may be risk of lung toxicity following chest irradiation for breast cancer.

Key words: Lung toxicity following chest irradiation, Breast cancer, Atopic manifestation

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放射線療法とTS-1/low dose CDDP同時併用療法が著効した
肝癌骨転移の2例

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**TWO CASES OF HEPATOCELLULAR CARCINOMA WITH BONE METASTASIS
RESPONDING TO CONCURRENT TS-1/LOW-DOSE CISPLATIN (CDDP) THERAPY
AND RADIOTHERAPY**

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Abstract: Radiotherapy is effective in relieving pain caused by metastatic bone cancer. Because radiotherapy serves as a palliative measure, pain relief lasts no more than several months. We experienced two cases of hepatocellular carcinoma with bone metastasis that responded to concurrent TS-1/low dose cisplatin (CDDP) therapy and radiotherapy. Highly favorable effect was obtained with minimum adverse events in both cases. Therefore this therapy may be applicable for the treatment of hepatocellular carcinoma with bone metastasis.

Key words: Hepatocellular carcinoma, Bone metastasis, TS-1/low dose CDDP, Radiotherapy

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放射線治療中に放射線皮膚炎に伴って大型の水疱が生じた一例

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A CASE SHOWING A BLISTERING DISORDER IN RADIATION DERMATITIS DURING RADIATION THERAPY

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Abstract: We experienced a case showing a blistering disorder in radiation dermatitis during radiation therapy for thymic cancer. Application of steroid to the lesion improved blisters. The literature on bullous eruption including radiation-induced bullous pemphigoid was critically reviewed.

Key words: Radiation therapy, Radiation dermatitis, Bullous pemphigoid

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JASTRO平成16・17年度研究調査報告
卒前におけるセミナー形式専門的教育がキャリアパスに与える
影響の検討；
参加者の視点でみたJASTRO学生セミナー

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EFFECTS OF JASTRO PRE-GRADUATED TEACHING COURSE ON CAREER PATH;
FROM PARTICIPANTS' VIEWPOINT

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Abstract: The Japanese Society for Therapeutic Radiology and Oncology (JASTRO) has conducted radiation oncology seminars for medical students and interns every summer since 1995. The seminar aims to help them understand what radiation oncology involves. To determine its effects, we asked the 222 participants to complete a questionnaire about the seminar and their career paths. Those who had chosen to be radiation oncologists were significantly satisfied with the seminar. Our findings suggest that attractive seminars contribute to an increase in the number of radiation oncologists.

Key words: Radiation oncologist, Seminar, Medical education, Career paths

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