difference being that the primary site of oligometastases was uncontrolled (sync-oligometastases) or controlled (oligo-recurrence). The goal of this multicenter study was to evaluate treatment outcomes and to evaluate factors affecting relapse-free survival (RFS) after stereotactic body radiotherapy (SBRT) for pulmonary oligometastases.

**Materials and Methods:** A total of 96 patients (65 males and 31 females) who received SBRT for oligometastatic lung tumors between January 2004 and April 2014 at 4 high-volume institutions in Japan were enrolled in this retrospective study. The primary sites were the colorectum \((n=25)\), lung \((n=24)\), head and neck \((n=8)\), uterus \((n=8)\) and others \((n=12)\) and pathologically unproven \((n=16)\). The median tumor diameter was 19 \text{mm}\ (range, 6-42 \text{mm}). Ten cases were sync-oligometastases and 79 cases were oligo-recurrences. The median disease-free interval (DFI) between initial therapy and SBRT was 24 \text{months}\ (range, 0-246 \text{months}). The median calculated biological effective dose was 105.6 \text{Gy}\ (range, 75-134.4 \text{Gy}) using the LQ model with \(\alpha/\beta = 10 \text{Gy}\). The prescribed dose was delivered to the isocenter \((n=56)\) or covering 95\% of the PTV \((D95, n=40)\). Cumulative overall survival (OS), local control rate (LCR) and RFS rate were calculated using Kaplan-Meier curves, and the log-rank test was used to compare the curves. Multivariate analysis for RFS was performed using a Cox proportional hazards model. Statistical significance was defined as a value of \(p < 0.05\) in this study.

**Results:** The median follow-up periods were 21 \text{months}\ (range, 1-119 \text{months}) for all patients and 32 months (range, 1-119 months) for survivors. The 3-year OS, LCR and RFS rates were 52\%, 75\% and 25\% respectively. Radiation pneumonitis of grade 3 was found in 2 patients and gastrointestinal toxicity of grade 4 was found in 1 patient. No grade 5 toxicity occurred. The 3-year RFS for sync-oligometastases was 0\% and that for oligo-recurrence was 28\% (Figure, \(p < 0.01\)). The 3-year RFS for the subgroup of DFI \(< 24 \text{months}\) and that for the subgroup of DFI \(> 24 \text{months}\) were 17\% and 34\%, respectively \((p = 0.01)\). In multivariate analysis, sync-oligometastases \((p = 0.01)\) and D95 \((p = 0.02)\) were significantly unfavorable factors for RFS.

**Conclusions:** In SBRT for oligometastatic lung tumors, control of the primary site is a significant prognostic factor for RFS. Single oligo-recurrence tumor in the lung could be a good candidate for SBRT.

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**PO-0653**

Impact of the delineation of the heart on dose-volume histograms in treatment planning of NSCLC

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**Purpose/Objective:** In the multicenter PET-Plan study, which is comparing FDG-PET based treatment planning for chemoradiotherapy of NSCLC with conventional target volumes in terms of loco-regional progression the cardiac dose is an important planning criterion. The presented study examines the extent of deviation of delineated heart contours from two study centers compared to the protocol delineation and its effect on the heart dose with particular consideration of the dose distribution.

**Materials and Methods:** Heart contours from 59 patients of two study centers were re-delineated in strict adherence to the study protocol (starting just below the level in which the pulmonary trunk branches into the left and right PA, ending where the heart blends with the diaphragm). The volumes and dose values of the original contours of both centers were compared with the results resulting from the protocol-compliant delineation with Student's \(t\)-test.

**Results:** The original heart contours of the centers were too small in every case compared to the respected protocol specification \([684.10 \pm 302.37 \text{cm}^3 \text{ versus } 868.18 \pm 219.97 \text{cm}^3]\). The difference was highly significant with \(p = 1.267 \times 10^{-14}\). The heart dose-volume parameters of the original study center contours were compared with the results from the protocol-oriented delineation values, significantly smaller (\(D_{\text{max}}: p=0.0068; \ V_5: p=0.00013; \ V_{40}: p=3.4 \times 10^{-9}\)). In three cases, the study protocol's restriction \((V_{40} \leq 50\%)\) was exceeded after correct delineation of the heart with a percentage of 54.55\%, 60.12\% respectively 58.04\%.

**Conclusions:** Incorrect delineation of the heart can lead to a misinterpretation of the actual organ dose. In individual cases this can be associated with the presumption that specific dose restrictions are met, even though dose limits are already exceeded.

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**PO-0654**

Efficacy of simultaneous integrated boost intensity-modulated radiation therapy in patients with LD-SCLC

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**Purpose/Objective:** To evaluate the feasibility and efficacy of simultaneous integrated boost intensity-modulated radiation therapy (SIB-IMRT) in patients with limited-disease small cell lung cancer (LD-SCLC).

**Materials and Methods:** Patients with LD-SCLC were treated with SIB-IMRT within 1 week after completion of 2 cycles of induction chemotherapy. Then 2-4 cycles of adjuvant chemotherapy were administered within 1 week after SIB-IMRT. Irradiation was given accelerated hyper-fractionated with the prescribed dose 57 Gy at 1.9 Gy twice daily to the...