patients (74%) received systemic therapy immediately before (n = 10) or after (n = 4) primary site treatment. 7 patients (37%) underwent additional metastasis-directed local therapy around the time of the primary tumor management. Pain reduction was documented in 89% of patients who presented with pain (8 of 9) after CMT. 1 patient (5%) had an in-field local recurrence. With a median follow-up of 21 months, 2-year local recurrence-free survival, progression-free survival and cancer-specific survival rates were 92%, 36% and 65%. The rate of wound complications within 120 days of surgery was 16%. The rate of late RT toxicities was 26%, including grade 1 (n = 2), and grade 2 (n = 3) lymphedema; there were no grade ≥3 late toxicities.

Conclusion: For properly selected metastatic STS patients with good performance status and long expected survival, a CMT approach offers favorable local control, low toxicity, and pain mitigation in those with painful primary tumors. In these patients, combined modality primary treatment should be considered as it provides better local control compared to an RT-alone approach.

Author Disclosure: **A.J. Arifin**: Board member for charitable foundation; Canadian Radiation Oncology Foundation. **A.J. Bishop**: None. **D. Mitra**: None. **D. Araujo**: None. **E.F. Nassif Haddad**: None. **R. Ratan**: None. **J.A. Livingston**: None. **V. Lewis**: None. **P. Lin**: None. **B. Moon**: None. **E. Keung**: None. **C.L. Roland**: None. **C. Scally**: None. **B. Guadagnolo**: None. **A. Farooqi**: None.

2949

Rates of Sexual Dysfunction and Prevalence of Estrogen Supplementation after Pelvic Radiation for Women with Early-Onset Rectal Cancer

A. Arzola,[1] A. Kohut-Jackson,[2] T.H. Yao,[3] S. Kundu,[3] D. Nebgen,[3] and E. Holliday[4]; *[1]The University of Texas MD Anderson Cancer Center, Houston, TX, [2]Saint Louis University School of Medicine, St. Louis, MO, [3]The University of Texas MD Anderson Cancer Center, Houston, TX, [4]Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX*

Purpose/Objective(s): Pelvic radiation (RT) for rectal cancer contributes to vaginal dryness, stenosis and dyspareunia. These problems are compounded by hormonal changes experienced by women with early-onset rectal cancer (EORC). Estrogen supplementation may improve vaginal and sexual problems by promoting vaginal epithelial regeneration, but many women are not routinely offered this treatment. We aimed to evaluate patient-reported sexual problems and frequency of estrogen prescription among women treated with pelvic RT for EORC.

Materials/Methods: Patients with EORC, defined as age <50 years at diagnosis, who presented to our Rectal Cancer Clinic from 2012-2022 were enrolled in a prospective patient-reported outcome (PRO) study. For this project, we looked specifically at scores for sexual interest (range = 0-100, higher scores = more interest) and dyspareunia (range = 0-100, higher scores = more pain) items in the EORTC QLQ-CR29. We recorded whether estrogen was prescribed after pelvic RT (vaginal, oral or both) and when it was prescribed. To evaluate the association with clinical and treatment factors, dyspareunia and sexual interest scores were analyzed with a linear mixed-effects model including age, distance from the anal verge (AV), T-stage, time, type of surgical procedure, estrogen prescription, pelvic floor physical therapy and vaginal dilator use.

Results: Forty women with EORC enrolled in this prospective PRO study. The median [IQR] age at RT was 43 [38-48] years, 34 (85%) were white, 35 (88%) had microsatellite stable tumors, 29 (73%) had T3 tumors and the median [IQR] distance from the AV was 6 [5-8] cm. The majority (N = 38, 95%) were treated with 50-50.4Gy in 25-28 fractions with concurrent chemotherapy. Thirty-six women completed the sexual interest and dyspareunia items. At a median [IQR] 24 [14-49] months after pelvic RT, 14 (39%) and 15 (42%) women said they were not at all and a little interested in sex, respectively. Ten (28%), six (17%) and 8 (22%) women said they experienced a little, quite a bit and very much pain with intercourse, respectively. Only 17 women (35%) were prescribed estrogen after pelvic RT. The median [interquartile range IQR] time from RT to estrogen prescription was 17.6 [2.4-27.6] months. Of women prescribed estrogen, 12 (66.7%) were prescribed vaginal, 2 (11.8%) were prescribed oral, 1 (5.9%) was prescribed both oral and vaginal and 2 (11.8%) were prescribed pellets. In linear mixed-effects models for sexual interest and dyspareunia, only distance from the AV was significantly associated with sexual interest (B = -3.03 (1.29); P = 0.029).

Conclusion: Although sexual dysfunction is prevalent after pelvic RT for women with EORC, estrogen was only prescribed for 35% of patients, and the median time to prescribing estrogen was 18 months. Early and proactive referrals post-RT for discussion of estrogen supplementation may improve sexual health outcomes for women with EORC. Further prospective study is warranted.

Author Disclosure: **A. Arzola**: None. **A. Kohut-Jackson**: None. **T. Yao**: None. **S. Kundu**: None. **D. Nebgen**: None. **E. Holliday**: None.

2950

Dosimetric Factors Linked to Postoperative Pulmonary Complications and Intensive Care Unit Stay in Locally Advanced Esophageal Cancer Patients Undergoing Preoperative Chemoradiotherapy

B. Aydin,[1] V. Semiz,[1] S. Onder,[1] K. Atila,[2] S. Derici,[3] T. Yavuzsen,[4] and İ.B. Gorken[1]; *[1]Dokuz Eylul University Department of Radiation Oncology, İzmir, Turkey, [2]Dokuz Eylul University Department of General Surgery, Izmir, Turkey, [3]Dokuz Eylul University Department of Gastrointestinal surgery, Izmir, Turkey, [4]Dokuz Eylul University Department of Medical Oncology, Izmir, Turkey*

Purpose/Objective(s): This study aims to identify the most reliable dosimetric predictors for pulmonary complications and prolonged intensive care unit (ICU) stays following neoadjuvant chemoradiotherapy (NACRT) and surgery for locally advanced esophageal cancer.

Materials/Methods: We retrospectively reviewed the medical records of 32 patients with esophageal cancer who received surgery following NACRT for locally advanced esophageal cancer from January 2014 to June 2023. Following the completion of NACRT, all patients received transthoracic esophagectomy with lymphadenectomy. Before surgery, all patients were evaluated in terms of American Society of Anesthesiology (ASA) classification, COPD status, and hematological values. The levels of complications were evaluated with the comprehensive complication index (CCI). The patients' radiotherapy (RT) plans were evaluated retrospectively, and lung V5, V10, V15, V20, V30, and mean lung dose (MLD) data were obtained using dose-volume histograms. The effect of this data on the need for postoperative intensive care (IC) and the occurrence of pneumonia was calculated using binary logistic regression analysis. The impact of categorical clinical features on the requirement for IC and the occurrence of postoperative pneumonia was assessed using the Fisher's exact test.

Results: The median age was 58 (range = 26−77), and the median interval between NACRT and surgery was 5 weeks (range = 4−14). The RT dose was median 45 Gy/25 fractions (range = 41.4-50.4) with 1.8−2.0 Gy daily per fraction, and 87.5% of patients received FOLFOX as concurrent chemotherapy. Neoadjuvant chemoradiotherapy was applied to 8 (25%) of the patients using 3D conformal, 20 (62.5%) using VMAT, and 4 (12.5%) using the hybrid (3D-IMRT) technique. The median ASA score before surgery was 2 (1-3). Only in 1 (3.1%) patient, the score was 3. Before surgery, three (9.4%) patients were diagnosed with COPD, and one (3.1%) patient had grade 2 neutropenia. Intensive care was required in 14 patients after surgery. Postoperative pneumonia occurred in 12 (37.5%) patients. The median postoperative CCI value of the patients was 22.6 (range = 0−100). Lung median V5, V10, V15, V20, V30, and MLD doses were 65.75 (28.2-95.9), 40.5 (22.4-90.6), 29.55 (13.4-45.9), 18.10 (7.6-30.6), 7.50 (2.9-24.7), and 1126.8 cGy (263-1628), respectively. The impact of preoperative COPD presence on postoperative pneumonia and IC needs was not found to be statistically significant (p = 0.274 and p = 0.596). In multivariate analyses, lung V5 (p = 0.042), V10 (p = 0.037), and V15 (p = 0.049) doses statistically significantly affected the need for IC.

Conclusion: Lung volume exposed to low-dose radiation (V5-V15) was found to be strongly associated with prolonged intensive care unit stay after surgery for locally advanced esophageal cancer. More comprehensive studies are needed on this subject.

Author Disclosure: **B. Aydin**: None. **V. Semiz**: None. **S. Onder**: None. **K. Atila**: None. **S. Derici**: None. **T. Yavuzsen**: None. **İ.B. Gorken**: None.

2951

Partial Stereotactic Ablative Radiotherapy Boost before Conventional Radiotherapy (P-SABR) for Large (≥ 5 cm) Unresectable Soft Tissue Sarcoma

Y. Bai, X. Gao, S. Qin, S. Li, M. Ma, S. Liu, and Y. Gao; *Department of Radiation Oncology, Peking University First Hospital, Beijing, China*

Purpose/Objective(s): The use of definitive radiotherapy in cases of unresectable soft-tissue sarcomas (STS) is a topic of debate. Additionally, the prognosis of large (≥ 5 cm) unresectable STS is much worse. This study aimed to evaluate the clinical outcomes of partial stereotactic ablative radiotherapy boost before conventional radiotherapy (P-SABR) for large unresectable STS.

Materials/Methods: Between 2012 and 2023, 28 patients with 33 sites of unresectable STSs who underwent P-SABR radiotherapy were retrospectively analyzed in this study. All the patients had locally advanced, recurrent, or metastatic stages with a tumor diameter of ≥ 5 cm. Locations of the tumor were 16 (48.5%) in the retroperitoneal and abdomen, 5 (15.2%) in the extremities, 6 (18.2%) in the chest, 3 (9.1%) in the head and neck, and 3 (9.1%) in the truncal wall. The histologic grades of the tumors were 24.2% G1 and 75.8% G2 to G3. The median size of the tumor at P-SABR radiotherapy was 11.6 cm (range = 5.1- 27.1 cm). The P-SABR plan was combined with a partial SABR boost plan followed by a conventional radiotherapy (CFRT) part. In the SABR part, the prescription dose for PTV was 1.8 to 3 Gy per fraction over 3 to 5 fractions, and the artificially delineating GTV-boost (GTVb) within GTV received a simultaneously integrated SABR dose (6 to 12 Gy per fraction). In the following CFTR part, the median prescription dose for the entire PTV was 45 Gy (34 to 62 Gy) in 22 fractions (15 to 31 fractions). For the synthetic P-SABR plan, the median cumulative dose of PTV and GTVb was 55.2 Gy (range = 40- 71.3 Gy) and 74 Gy (range = 58-98.1 Gy), respectively. Out of the 28 patients, 7 (21.2%) were treated concurrently with chemotherapy, 11 (33.3%) were concurrently treated with immunotherapy (PD-L1 or PD-L1 antibody), and 15 (45.5%) patients were treated with radiotherapy alone.

Results: The median follow-up for patients was 30 months (with a range of 4.8 to 55.2 months). The overall survival rates at 1, 2, and 3 years were 87.1%, 42.8%, and 30.6%, respectively. The local control rates at 1, 2, and 3 years were 100%, 92.3%, and 92.3%, respectively. In addition, four cases became operable after radiotherapy, and the histologic assessment after neoadjuvant radiotherapy showed complete response (CR) for 3 cases and stable disease (SD) for 1 case. However, the out-of-field disease progression rates at 1, 2, and 3 years were 62.9%, 75.3%, and 81.5%, respectively. Only one (3.0%) patient experienced grade 3 leucopenia, and no other toxicity of grade 3 or higher was reported. One (3.0%) patient experienced late grade 2 pain.

Conclusion: In conclusion, the high local control rate and well-tolerated toxicity of P-SABR (partial stereotactic ablative radiotherapy boost before conventional radiotherapy) in large unresectable soft-tissue sarcomas is encouraging. However, there is a need to explore combination therapy with P-SABR to decrease the out-of-field disease progression.

Author Disclosure: **Y. Bai**: None. **X. Gao**: None. **S. Qin**: None. **S. Li**: None. **M. Ma**: None. **S. Liu**: None. **Y. Gao**: None.

2952

Proton Re-Irradiation for Esophageal Cancer: A Single-Institution Retrospective Series

M. Bakhtiar,[1] J.Y. Wo,[2] H.J. Roberts,[2] A.R. Parikh,[3] S.J. Klempner,[3] J.W. Clark,[3] M.R. Strickland,[3] C.R. Morse,[4] A. Niemierko,[5] and T.S. Hong[2]; *[1]Harvard Radiation Oncology Program, Boston, MA, [2]Department of Radiation Oncology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [3]Division of Medical Oncology, Department of Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [4]Division of Thoracic Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [5]Massachusetts General Hospital, Boston, MA*

Purpose/Objective(s): Re-irradiation for esophageal cancer carries a risk of toxicity. Proton radiotherapy may result in acceptable toxicity due to nearby tissue sparing. This study describes patients who received proton re-irradiation (PRT) for esophageal cancer at our institution between 2015 and 2023.

Materials/Methods: We conducted a single-institution retrospective review of patients who received PRT for esophageal cancer. Medical records were reviewed for patient and disease characteristics, treatment details, and acute toxicities according to the common terminology criteria for adverse events (CTCAE) v5.0. Long-term toxicities (> 3 months post-treatment) including major adverse cardiac events (MACE) and vertebral fractures were documented. Descriptive statistics were calculated. Kaplan-Meier survival analysis was performed.

Results: Fifteen patients were included in the study. Median age was 65.0 (inter-quartile range [IQR] = 60.0-74.0); 47% (n = 7) were female. Common reasons for prior thoracic radiotherapy (RT) included esophageal cancer (n = 6, 40%) and Hodgkin's Lymphoma (n = 5, 33%). Median prior dose was 41.2Gy (IQR = 36.0-50.4) in median 25 fractions. Median time since prior RT was 10.0 years (IQR = 5.2-28.2). Patients had squamous cell carcinoma (n = 9, 60%) or adenocarcinoma (n = 6, 40%). Eight patients had endoscopic staging; the most common tumor and nodal stages were T3 (n = 5) and N1 (n = 4). Patients received passive scatter (n = 10) or pencil beam scanning technique (n = 5). All received 50.4Gy in 28 fractions. Six patients (40%) received chemotherapy before RT; 13 (87%) received it concurrently, most commonly carbo/paclitaxel (n = 10, 75%). All patients completed treatment without interruption. The most common acute toxicities were fatigue (n = 8, 53%), dysphagia (n = 8, 53%), and anorexia (n = 4, 27%). Two patients (13%) experienced grade 3 dysphagia; all other acute toxicities were grade 1-2. Six patients (40%) had esophagogastric surgery. All had an R0 resection, and 3 (20%) had a pathologic complete response. One patient had a post-RT vertebral fracture. Five patients (33%) developed a MACE, including cardiac arrest (n = 3), myocardial infarction (n = 1), and heart-failure related hospitalization (n = 1). Among patients who developed a MACE, median mean heart dose was 8.2Gy (IQR: 4.6-9.4); for the entire cohort it was 4.2Gy (IQR: 3.2-8.2). Three patients who developed a MACE had a pre-existing cardiac comorbidity, such as coronary heart disease. Median follow-up was 2.2 years (IQR: 1.1-6.3). Two-year survival was 79% (95% CI = 48-93%). Two patients (13%) had disease recurrence, one local and one distant.

Conclusion: In this single-institution series, patients who received PRT for esophageal cancer experienced low-grade acute toxicities and good disease control. One-third developed a MACE. Patients who underwent esophagogastric surgery demonstrated excellent treatment response. Our institutional experience may inform selection of patients for PRT for esophageal cancer.

Author Disclosure: **M. Bakhtiar**: None. **J.Y. Wo**: Grant/research funding; Genentech. **H.J. Roberts**: None. **A.R. Parikh**: Grant/research funding; PMV, Genentech, Erasca, Syndax, Parthenon. Honoraria; GSK. Travel expenses; Karkinos Healthcare, GSK. Salary support; Guardant. Compensation/Payment; Scare, Hookipa, PMV, Pfizer. Ownership equity; C2i Genomics, XGenomes, Cadex, Vionix, Parithera. **S.J. Klempner**: Compensation/Payment; Bristol Meyers Squibb, Merck, Eli Lilly, Roche, Daiichi-Sankyo, Pieris, Natera, Novartis, Mersana, Sanofi-Aventis, Servier, Coherus.