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Surgery After Neoadjuvant Stereotactic MRI Guided Adaptive Radiation in Pancreatic Cancer: Multi-institutional Toxicity and Survival Outcomes

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TABLE 1. Predictors of Initiation of Adjuvant Therapy Within the First Half of Patients (≤ 59 d) Assessed by Multivariable Analysis

	Odds Ratio	Standard Error	z-score	P>z	95% Confidence Interval	
Treatment Modality						
Radiation alone	Reference					
Chemotherapy alone	0.64	0.08	-3.38	<0.01	0.50	0.83
Chemoradiation	0.58	0.07	-4.23	<0.01	0.45	0.74
Insurance Status						
Private Insurance	Reference					
No Insurance	1.20	0.17	1.28	0.20	0.91	1.58
Medicaid	1.16	0.11	1.53	0.13	0.96	1.40
Medicare	1.05	0.07	0.67	0.50	0.92	1.19
Tumor Size						
2 cm or Less	Reference					
2.1 cm to 5 cm	0.95	0.05	-0.97	0.33	0.86	1.05
5cm or greater	0.76	0.06	-3.22	<0.01	0.65	0.90
Unknown	0.86	0.07	-1.95	0.05	0.73	1.00
Race						
White	Reference					
Black	1.20	0.10	2.15	0.03	1.02	1.42
Hispanic	1.23	0.11	2.37	0.02	1.04	1.46
Other	0.99	0.09	-0.13	0.90	0.82	1.19
Age						
≤ 65 years	Reference					
>65 years	1.23	0.08	3.21	<0.01	1.08	1.40

within 8 weeks. However, the impact of these time points has not been formally analyzed. With the emergence of COVID-19 delaying therapy for a number of oncology patients, we set out to evaluate factors associated with delays in the initiation of adjuvant therapy for CCA as well as the impact of these delays on survival outcomes.

Objectives: To understand factors associated with timing of adjuvant therapy for cholangiocarcinoma and the impact of delays on overall survival (OS).

Methods: Data from the National Cancer Database (NCDB) for patients with non-metastatic bile duct cancer from 2004 to 2015 were analyzed. Patients were included only if they underwent surgery and adjuvant chemotherapy and/or radiotherapy (RT). Patients who underwent neoadjuvant therapy or palliative treatments were excluded. Pearson's χ^2 test and multivariate logistic regression analyses were used to assess the distribution of demographic, clinical, and treatment factors. After propensity-score matching with inverse probability of treatment weighting, OS was compared between patients initiating therapy past various time points using Kaplan Meier analyses and doubly-robust estimation with multivariate Cox proportional hazards modeling.

Results: In total, 7,733 of 17,363 (45%) patients underwent adjuvant treatment. The median time to initiation of adjuvant therapy was 59 days (interquartile range 45-78 d). Age over 65, black and Hispanic race, and treatment with RT alone were among the factors associated with later initiation of adjuvant treatment (Table 1). Patients with larger tumors and high grade disease were more likely to initiate treatment early. After propensity score weighting, there was an OS decrement to initiation of treatment beyond the median of 59 days after surgery (Fig. 1).

Conclusions: We identified patient and disease characteristics that are related to the timing of adjuvant therapy in patients with biliary cancers. Troublingly, there are racial disparities associated with the timely initiation of adjuvant therapy. There was an OS decrement associated with delays beyond the median time point of 59 days. This finding may be especially relevant given the treatment delays seen as a result of COVID-19.

(P042) Surgery After Neoadjuvant Stereotactic MRI Guided Adaptive Radiation in Pancreatic Cancer: Multi-institutional Toxicity and Survival Outcomes

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Background: Favorable toxicity and survival outcomes after dose escalated stereotactic MR guided adaptive radiation therapy (SMART) have been recently published for locally advanced (LA) and borderline resectable (BR) pancreatic cancer. Perioperative morbidity and mortality are not well understood after ablative radiation therapy, which may temper enthusiasm for offering surgery.

Objectives: The purpose of this study was to investigate survival and toxicity in resected pancreas cancer patients after neoadjuvant ablative SMART.

Methods: In this IRB approved analysis, we retrospectively reviewed 33 consecutive patients with resectable, BR, and LA pancreatic cancer based on NCCN 2.2021 staging criteria who were treated at 2 institutions from 2017-2020 with neoadjuvant SMART 50 Gy in 5 fractions on a 0.35T MR Linac and later underwent definitive surgical resection. Overall survival (OS) and locoregional control (LRC) were evaluated by Kaplan-Meier method.

Results: Median follow up was 22.4 months from diagnosis and 17.8 months from last day of RT. Most had BR (55%), otherwise initially resectable (33%) or LA (12%) pancreatic cancer. Median duration of induction chemotherapy was 3.5 (SD 1.6) months with most common regimens being FOLFIRINOX (74%), gemcitabine/abraxane (24%) and FOLFOX (3%). Performance status was ECOG 0, 1, 2 in 16 (48.5%), 12 (36.4%), and 5 (15.2%), respectively. Whipple was performed in 27 (82%) of patients, distal pancreatectomy in 4 (12%), and total pancreatectomy in 2 (6%). The median duration from SMART completion to surgery was 6.9 weeks (4.7-44.1). R0 resections were achieved in 28 (84.8%) of patients with the rest being R1, all in BR patients. Vascular resection/reconstruction was performed of the portal vein (PV) in 8 (24.2%) patients, SMV in 4 (12%), SMA in 1 (3%), and common hepatic artery in 2 (6%). Vascular resection/reconstruction was performed in all LA patients. Median OS, 1-year OS, and 2-year OS from diagnosis were 29.6 months, 93.8%, 81.5%, respectively. Median OS from RT was not yet reached; 1-year OS was 90.9%. LRC at 1 and 2 years was 97% and 93%, respectively. Radiation related acute and late grade 3+ gastrointestinal toxicity was seen in 2 (6%) and 2 (6%) patients. Post-op mortality at 30 and 90 days was seen in 2 (6%) and 3 (9%) of patients with 1 death from GI bleed attributed to surgery and 1 death from hepatic ischemia related to PV resection.

Conclusions: To the best of our knowledge, this is the first report suggesting that surgery for pancreas cancer after dose escalated 5-fraction SMART is feasible. Further clarification is needed with respect to ideal patient selection and timing for surgery, the safety of arterial versus venous resection/reconstruction, and histopathologic response after delivery of ablative versus non-ablative radiation dose.

(P043) Executive Summary of the American Radium Society™ (ARS) Appropriate Use Criteria (AUC) for Locoregional Gastric Adenocarcinoma: Systematic Review and Guidelines

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Background: Gastric cancer is a leading cause of cancer mortality worldwide. Most patients present with locally advanced or advanced disease for which multi-modal therapy is often indicated.