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

Eric Schaff

Henry Ford Health, eschaff2@hfhs.org

Celina Kirsch

Henry Ford Health, ckirsch2@hfhs.org

Parag J. Parikh

Henry Ford Health, PParikh2@hfhs.org

Michael Chuong

Roberto Herrera

See next page for additional authors

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Authors

Eric Schaff, Celina Kirsch, Parag J. Parikh, Michael Chuong, Roberto Herrera, Horacio Asbun, Ramon Jimenez, Farzan Siddiqui, Gazala Khan, Santiago Aparo, Fernando De Zarraga, Antonio Ucar, Rupen Shah, Pin Li, Benjamin Movsas, and David Kwon

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	Reference					
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	Reference					
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	Reference					
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	Reference					
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	Reference					
≤ 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

Eric Schaff, MD¹, Celina Kirsch, PAC¹, Parag Parikh, MD¹, Michael Chuong, MD², Roberto Herrera, BS², Horacio Asbun, MD², Ramon Jimenez, MD², Farzan Siddiqui, MD, PhD, CPE³, Gazala Khan, MD¹, Santiago Aparo, MD², Fernando De Zarraga, MD², Antonio Ucar, MD⁴, Rupen Shah, MD¹, Pin Li, PhD¹, Benjamin Movsas, MD³, David

Kwon, MD¹; ¹Henry Ford Health System, ²Miami Cancer Institute, ³Department of Radiation Oncology, Henry Ford Cancer Institute, ⁴Miami Cancer Institute

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 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 Loco-Regional Gastric Adenocarcinoma: Systematic Review and Guidelines

Leila Tchelebi, MD¹, Rachit Kumar, MD², Navesh Sharma, DO, PhD³, Christopher Anker, MD⁴, Joseph Herman, MD⁵, Karyn Goodman, MD⁶, William Jones, MD⁷, Nelson Yee, MD³, Madappa Kundranda, MD, PhD², Timothy Kennedy, MD, MBA⁸, Percy Lee, MD⁹, Suzanne Russo, MD¹⁰, William Small, MD, FACRO, FACR, FASTRO¹¹, Warren Suh, MD¹², Salma Jabbar, MD⁸; ¹PennState Health, ²Banner MD Anderson Cancer Center, ³Penn State Health, ⁴University of Vermont, ⁵Northwell Health, ⁶Icahn School of Medicine Mount Sinai, ⁷University of Texas Health Science Center at San Antonio, ⁸Rutgers Cancer Institute of New Jersey, Robert Wood Johnson Medical School, Rutgers University, ⁹University of Texas MD Anderson Cancer Center, ¹⁰Case Western Reserve University School of Medicine and University Hospitals, ¹¹Loyola University Chicago, Stritch School of Medicine, Cardinal Bernardin Cancer Center, ¹²University of California at Los Angeles, Ridley-Tree Cancer Center

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.