Volume 120, Number 2S, 1 October 2024
www.redjournal.org

Supplement to

INTERNATIONAL JOURNAL OF

RADIATION ONCOLOGY • BIOLOGY • PHYSICS



Proceedings of the

American Society for Radiation Oncology

The abstracts herein are embargoed and not for public information until 5:00 PM Eastern Time Friday, September 27th

ASTRO's 2024 Annual Meeting

66th Annual Meeting

Washington, DC

ELSEVIER

OFFICIAL JOURNAL OF THE AMERICAN SOCIETY FOR RADIATION ONCOLOGY

ASTRO

longer (110 vs. 59 months), but not statistically significant (p = 0.161). Post-surgical major wound complications reported in 14 (37.8%) patients.
Conclusion: SFRT preceding neoadjuvant CFRT in aggressive STS achieved favorable surgical margins and higher pCR rate (32.4%) than RTOG 0630 (19.4%) and 9514 (27.5%). This regimen exhibited favorable DFS with wound complication rates (37.8%) comparable to pre-operative arm of NCIC (35%) and RTOG 0630 (36.6%). Longer follow-up with a larger patient cohort is essential for a comprehensive evaluation.

Author Disclosure: **A.A. Olabumuyi**: None. **M.H. Brown**: None. **S. Bazyar**: Grant/research funding; Radiation Society of North America. **D. Kunaprayoon**: None. **V. Ng**: None. **W.F. Regine**: Stock; Xcision. Leadership; Faculty Physicians Inc. **J.K. Molitoris**: Grant/research funding; Sensius Healthcare.

3056

Predicting Pathological Lymph Node Involvement Using Machine Learning in Locally Advanced Rectal Cancer Patients Treated with Neoadjuvant Chemo-Radiotherapy

G. Ozden,[1] S. Gunes,[2] and M. Adli[1]; [1]*Department of Radiation Oncology, Marmara University School of Medicine, Istanbul, Turkey,* [2]*Turkcell Technology Research and Development Inc., Istanbul, Turkey*

Purpose/Objective(s): Following neoadjuvant chemo-radiotherapy (nCRT), some rectal cancer patients may have pathological lymph node (LN) involvement despite complete response in the primary tumor and should not be candidates for non-operative management. Identifying these patients may help to tailor the treatment approach. The aim of this study was to predict the rectal cancer patients with high risk of pLN involvement following nCRT, using machine learning (ML), based on pre-surgical patient-, disease- and treatment-related clinical factors.
Materials/Methods: Data of the rectal cancer patients treated with nCRT between 2013-2023 were collected. Patients with secondary pelvic malignancies, no LN dissection, RT-surgery interval > 21 weeks and cLN diameter < 5 mm were excluded. 143 patients were included in the analysis. Median age was 58 (26-83). Female/male ratio was 55/88. Tumor (T) location was proximal-, mid- and distal-rectum in 8, 58 and 77 patients, respectively. cT stage was T2, T3 and T4 in 9, 122 and 12 patients, respectively. 89 patients had cLN diameter ≥ 10 (10-34) mm. Except 16 (mucinous: 11, signed ring cell: 5) patients, all had adeno carcinoma NOS histology. Median pre-RT T and LN SUV_{max} were 15 (4-46) and 3 (1-30), respectively. Median GTV was 73 (23-370) cm^3. Median T length and thickness were 6 (2-14) cm and 16 (7-48) mm, respectively. Median T and regional LN doses were 56 (45-56) Gy and 50.4 (45-50.4) Gy, respectively, in 25-28 fractions, concurrently with capecitabine. Median RT-surgery interval was 11 (4-21) weeks. 48 patients were pN (+). A ML model was used to predict pLN involvement based on 32 parameters (including age, gender, BMI, smoking, Hb, Hct, T localization, histology, GTV, and cLN diameter). Logistic regression model, configured with hyperparameters, exhibited the best performance with high accuracy and F1 scores after testing various algorithms. The performance of the model was evaluated using precision (positive predictive value), recall (sensitivity), F1 score (performance of classification), accuracy, and ROC AUC value. The model was trained using 75% of the data and the remaining 25% was used for testing.
Results: Accuracy, F1 scores and ROC AUC value of the model were 85.71%, 70.59% and 0.78, respectively. Precision, recall and F1 score of the model are seen in the **Table**. Analysis of the confusion matrix revealed that the model successfully predicts 24 true negative and 6 true positive cases, with only 1 false positive and 4 false negatives. Similar accuracy rates on the training (84.76%) and test (85.71%) datasets were observed. Histology, BMI, Hct, Hb, and weight were the most significant parameters in the model.
Conclusion: Machine learning has a high rate of correctly predicting pathological lymph node status of the rectal cancer patients following nCRT and can possibly be used in clinical practice.

Abstract 3056 — Table 1

	pN(+)	pN(-)
Precision	86%	86%
Recall	60%	96%
F1 Score	71%	91%

Author Disclosure: **G. Ozden**: None. **S. Gunes**: None. **M. Adli**: None.

3057

Efficacy of Immune Checkpoint Inhibitors in Advanced Esophageal Squamous Cell Carcinoma Patients with Hepatitis B

J. Pan,[1] Q. Pan,[1] S. Wu,[2] Q. Zhang,[3] Y. Xu,[4] and J. Li[5]; [1]*Clinical Oncology School of Fujian Medical University, Fuzhou, Fujian, China,* [2]*Clinical Oncology School of Fujian Medical University, Fuzhou, Fujian, China,* [3]*The Affiliated Hospital of Putian University, Fuzhou, Fujian, China,* [4]*Clinical Oncology School of Fujian Medical University, Fuzhou, Fujian, China,* [5]*Department of Radiation Oncology, College of Clinical Medicine for Oncology, Fujian Medical University, Fuzhou, Fujian, China, Fuzhou, Fujian, China*

Purpose/Objective(s): Advanced esophageal squamous cell carcinoma (ESCC) usually has a poor prognosis. The combination of radiotherapy and immune checkpoint inhibitors (ICIs) can produce synergistic effects and improve the prognosis of patients with advanced ESCC. However, the efficacy of radiotherapy combined with ICIs in ESCC patients with HBV infection is still unclear. Therefore, this study aims to analyze the efficacy and safety of radiotherapy combined with ICIs in advanced ESCC patients with HBV infection.
Materials/Methods: This is a single-center, retrospective, real-world study that included HBV+ and HBV- ESCC patients who received first-line radiotherapy combined with immunotherapy. The primary endpoints are progression-free survival (PFS) and objective response rate (ORR), and the secondary endpoints are duration of response (DOR) and safety.
Results: A total of 131 patients with stage III and stage IV ESCC admitted to our hospital from January 2019 to April 2023 were included in this study, including 30 cases of HBV+ and 101 cases of HBV-. There were 18 (62.1%) males in the HBV+ ESCC group and 75 (75.0%) males in the HBV- ESCC group. The median age was 65 (interquartile range = 57 to 70) in the HBV+ group and 64 (interquartile range = 56 to 70) in the HBV- group. The median PFS of the HBV+ group was 20.2 months, and the median PFS of the HBV- group was 20.26 months, with no statistically significant difference (p = 0.154). The ORR of HBV+ group was 51.5%, which was higher than that of HBV- group (43.6%).
Conclusion: In this case series, HBV infection has no effect on the efficacy of first-line radiotherapy plus immunotherapy in patients with advanced ESCC, which needs to be verified by a larger cohort of patients.

Author Disclosure: **J. Pan**: None. **Q. Pan**: None. **S. Wu**: None. **Q. Zhang**: None. **Y. Xu**: None. **J. Li**: None.

3058

Increased Tumor Size and Progression Free Survival after ^{177}Lu-DOTATATE for Metastatic Gastroenteropancreatic Neuroendocrine Tumors (GEP-NETs)

J. Patel,[1] K. Zhang,[2] O.B. Gbolahan,[3] D.M. Schuster,[4] S. Muzahir,[4] and P.R. Patel[1]; [1]*Department of Radiation Oncology, Winship Cancer Institute of Emory University, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA,* [3]*Department of Hematology and Oncology, Winship Cancer Institute of Emory University, Atlanta, GA,* [4]*Department of Radiology and Imaging Sciences, Emory University, Atlanta, GA*

Purpose/Objective(s): The standard of care for well-differentiated, grade 1-2 GEP-NETs after somatostatin analog therapy includes ^{177}Lu-