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Abstract

Outcomes following SBRT for Pancreatic Cancer

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Objectives: The aim of this study is to look at recurrence and survival outcomes of patients with pancreatic cancer receiving Stereotactic Body Radiation Therapy (SBRT) either as part of their treatment on initial diagnosis or as part of salvage therapy on recurrence.

Methods: Retrospective analysis was performed on all patients with pancreatic cancer receiving SBRT between September 2014 and February 2019 at our institution. Local control (LC), progression-free survival (PFS), and overall survival (OS) were calculated using the Kaplan-Meier method. Univariate analysis was also used to calculate Hazard Ratios (HR).

Results: 27 patients were included, with median age of 69 years (47 - 90 years); 15 patients were female (56%). Median BMI was 23.7 kg/m2 (18.3 - 35.3 kg/m2). Median largest diameter of the mass pre-SBRT was 3.4 cm (1.2 - 5.8 cm). Median gross tumor volume (GTV) was 18.4 cc (1.3 - 297.6 cc). 9 patients had stent placement prior to receiving SBRT. Six patients (22%) received SBRT as part of their neoadjuvant treatment (nSBRT) prior to surgical resection; 14 patients (52%) received SBRT as part of their definitive therapy (dSBRT) after diagnosis; 7 patients (26%) received SBRT after recurrence of their disease post Whipple procedure (rSBRT). Median prescription dose was 33 Gy (25 -33 Gy) in 5 fractions every other day.

Thirteen patients had borderline resectable pancreatic cancer, five (38.5%) of whom eventually had surgery. Pathology showed had residual disease in all cases.

Median follow-up was 15.9 months (1.6 - 32.2 months). Median OS was 18 months and 11 months in patients receiving dSBRT and rSBRT. None of the patients in the nSBRT arm died and this was significantly different compared to the other two arms (p=0.047). Fifteen patients (55.6%) had local progression of their disease in the entire cohort. In those patients receiving nSBRT, 8 out of 15 patients (61.5%) achieved local control. Median PFS were 21 months, 3.7 months, and 3.2 months for nSBRT, dSBRT and rSBRT, respectively (p=0.001). Time to local control was also significantly better in nSBRT compared to the other 2 groups (p=0.03), with median LC of 21 months, 6 months and 5 months respectively for each group. Median PFS was higher in patients who underwent stent placement prior to SBRT compared to those who did not underwent stent placement, 15.9 months vs 3.9 months (p=0.03). No patients who

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underwent stent placement died, while 5 of 11 patients (45.5%) without stents died; However, this did not reach statistical significant (p=0.27). Univariate analysis showed similar effect of stent placement on PFS with HR 0.29 (95% CI: 0.09 - 0.95; p=0.04) and OS rates with HR 0.31 (95% CI: 0.034 - 2.81; p=0.3).

Conclusions: Patients who underwent SBRT prior to surgery had better OS and PFS than those who received SBRT in the definitive and recurrent settings. Local control rates were high in patients with borderline resectable pancreatic cancer receiving neoadjuvant SBRT. Further prospective studies are needed to assess the benefit of neoadjuvant SBRT in borderline resectable pancreatic cancer.