



## Impact of Dose and Fractionation on Lymphopenia Following Stereotactic Body Radiation Therapy for Pancreatic Cancer

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**Objectives:** Radiation-induced lymphopenia (RIL) is associated with inferior survival in patients with pancreatic cancer (PC). Stereotactic body radiation therapy (SBRT) has been shown to decrease the severity of RIL compared to conventional chemoradiation (CRT) and is associated with improved survival. We explore whether there is further sparing of lymphocytes with different dose fraction regimens of SBRT to pancreatic cancer.

**Methods:** Serial total lymphocyte counts (TLCs) were compared before and up to 6 months after SBRT. The maximum drop during this time-period was calculated as a percentage of baseline TLC and post-SBRT grade 2+ lymphopenia ( $TLC < 800/mm^3$ ) was recorded. We evaluated whether pre-RT maximum tumor diameter, PTV volume, or aortic dose influenced lymphopenia or clinical outcomes.

**Results:** A total of 33 patients were examined. Median BED10 was 89.7 Gy (79.2-100) with 58% and 42% receiving 3 and 5 fraction SBRT respectively; 60% had ablative doses with  $BED > 90$ . Incidence of lymphopenia did not differ between 3 versus 5 fractions or  $BED < 90$  vs  $BED \geq 90$ . There was no correlation between lymphopenia and PTV volume, pre-RT tumor diameter, or aorta dose ( $p = 0.62, 0.41, 0.83, 0.85$ ). There was no difference in survival for patients receiving 3 versus 5 fractions (median survival 24.9 vs 25.0 months,  $p = 0.99$ ) or for  $BED < 90$  vs  $BED \geq 90$  (Median survival 24.9 vs 23.0 months,  $p = 0.614$ ). Baseline ECOG 0 was associated with better overall survival compared to ECOG 1&2 (median survival not reached vs 24.8 months,  $p = 0.013$ ).

**Conclusion(s):** While previous studies have shown that SBRT has improved RIL compared to conventional CRT, this effect appears to be independent of SBRT fractionation, total BED, PTV volume, pre-RT tumor diameter, or aorta dose. Dose escalation of SBRT might not impact circulating immune cells.

