8595 **Poster Session**

Role of consolidative thoracic and prophylactic cranial radiation in extensive stage small cell lung cancer in chemo-immunotherapy era.

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Background: The role of consolidative thoracic and prophylactic brain radiation in extensive stage small cell lung cancer patients is controversial. We investigated the factors associated with the use of any radiation therapy (RT) and whether Radiation has a benefit to overall survival (OS) in the total patient group and whether this benefit is the same if Chemotherapy (CT) only is used, or chemo-immunotherapy (CT-IO) is used. **Methods:** The NCDB database was queried from years 2017-2019. Patients receiving systemic therapy- STX (CT or CT-IO) had to have at least 6 months of follow-up and have no brain metastases at diagnosis. All RT patients had to receive upfront systemic therapy, were treated 2 to 6 months from diagnosis, and if treated to the brain received 25Gy in 10 fractions only. Multi-variate analyses (MVA) were used to determine factors associated with OS and selection for any radiation. Propensity matching for factors affecting OS were used to generate Kaplan-Meier OS curves. Log-rank tests were used to determine differences in Kaplan Meier survival curves for the effects of RT on OS. **Results:** The total number of patients receiving RT or systemic therapy alone as well as their median follow-ups(months(mn) were (981, 33.02mn) and (8909, 30.59mn). The median time to the start of STX and RT were 22days and 135 days respectively. MVA noted that RT had a greater effect on OS (Thoracic, Brain, Both – HRs = 0.78, 0.75, and 0.68) than other interventions including IO (HR 0.87) and palliative care without RT (HR 1.07). Selection for radiation depended significantly upon factors affecting OS(HR) including liver metastases (0.59), females (1.21), age/10yr(0.78) and Charlson co-morbidity index of $>$ 3(0.66), but did not depend upon insurance status, race, or county income/high school graduation rates. Propensity score matched OS curves noted the same effects of RT on OS whether CT or CT-IO was given. The lowest HRs were noted when both thoracic and brain RT were given (see table). **Conclusions:** The patient with extensive stage small cell lung cancer who reach candidacy and receive RT may have a significant improvement in OS compared to the patients treated only with CT or CT-IO. Combined thoracic and prophylactic brain RT seems to be better than either one alone. The impact of radiation whether given to one or two sites may be more beneficial than immunotherapy added to chemotherapy. Research Sponsor: None.

Regimen	HR	p-value	N	18Month OS-KM
CT only	REF	REF	5783	15%
CT + Thoracic RT vs CT with no RT (Ref)	0.68(0.59,0.77)	$<$ 0.0001	256	28%
CT + Brain RT vs Ref	0.67(0.60,0.76)	$<$ 0.0001	305	33%
CT + Both Brain and Thoracic RT vs Ref	0.59(0.49,0.70)	$<$ 0.0001	112	39%
CT-IO	REF	REF	3126	19%
CT-IO with thoracic RT vs CT-IO (Ref)	0.68 (0.56,0.83)	$<$ 0.0001	119	38%
CT-IO with brain RT vs REF	0.73(0.60,0.88)	$<$ 0.0001	132	38%
CT-IO with Thoracic + brain RT vs Ref	0.62(0.46,0.82)	$<$ 0.0001	57	44%