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IMPACT OF SYSTEMIC TREATMENT ON CARDIAC EVENTS FOLLOWING CHEMORADIOTHERAPY IN STAGE III LUNG CANCER PATIENTS

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BACKGROUND: Radiotherapy (RT) administered for lung cancer treatment has been associated with the development of radiation-induced heart disease. Cardiovascular risk factors (CVRF), prior cardiovascular disease (CVD), RT dosimetry parameters and coronary artery calcium (CAC) score have been studied as predictors of symptomatic cardiovascular events. However, there is limited evidence on the impact of chemoradiation (ChTRT) with or without consolidation immunotherapy (IT) in cardiac events in stage III lung cancer.

METHODS: We conducted a retrospective study including patients with locally advanced lung cancer treated in our hospital with RT. Clinical and treatment data, pre-existing CVD and CVRF as well as subsequent cardiac events and survival data were extracted from medical records. RT dosimetry parameters and CAC score were obtained from the treatment planning software.

RESULTS: From 2015 to 2022, 195 pts were identified. Median follow up was 25.5 months (95% CI 29,7-36.7). Cardiac events presented in 14 patients (7,2%) with median time to onset of 30,5 months (Table 2). Median time to onset was shorter in patients with prior CVD (Figure 1). Higher heart RT dose (V30, V40 and V50) increased the risk of cardiac events (Table 3). Adding ChT, its timing and consolidation IT did not associate with cardiac events (Table 4). Higher levels of CAC score were not associated with an increase in cardiac events.

CONCLUSION: Cardiac events presented in 7,2% pts after thoracic RT. Higher heart RT dose and previous CVD increased their incidence, while the addition of systemic therapies did not show any impact.

Table 1. Patient characteristics

	N(%) / median [range]
Age (years)	69 [38-89]
Sex -Female -Male	 56 (29%) 139 (71%)
Histology -NSCLC -SCLC	 164 (84%) 31 (16%)
Location -Left-sided -Right-sided -Mediastinum	 71 (36%) 110 (57%) 14 (7%)
CVRF	187 (96%)
Prior CVD	55 (28%)
Treatment modalities -Concomitant ChTRT -Sequential ChTRT -RT alone	 123 (63%) 55 (28%) 17 (9%)
Consolidation IT	38 (20%)

Table 2. Cardiac events

All cardiac events	14 (7,2%)
-Cardiopathy	9 (5%)
-Arrythmia	8 (4%)
-Valvular heart disease	2 (1%)
Time to onset median (95% CI)	30,5 m (27-34,5)

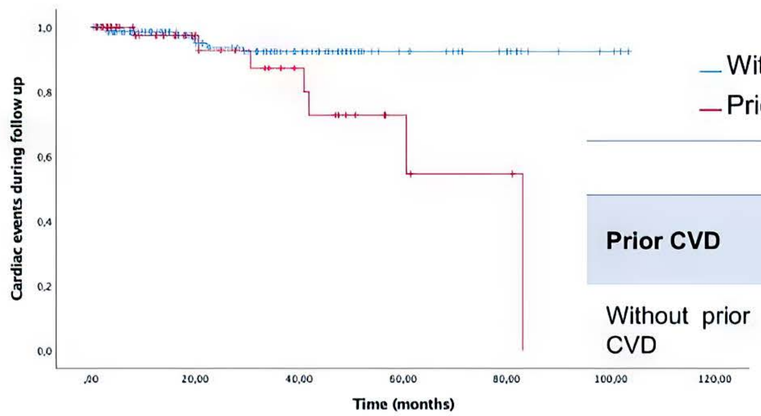
Table 3. Cardiac events according dosimetric parameters. Univariant analysis.

	No cardiac events (N= 181)	**Cardiac events** (N=14)	p
V5	41,2	47	0,5
V30	10,2	17,7	**0,02**
V40	6,2	12	**0,01**
V50	3,4	6,8	**0,01**

Table 4. Cardiac events according treatment modality

	No cardiac events (N= 181)	**Cardiac events** (N=14)	p
Concomitant ChTRT (N=123)	114 (93%)	9 (7%)	
Sequential ChTRT (N=55)	52 (95%)	3 (5%)	0,6
RT alone (N=17)	15 (88%)	2 (12%)	
Consolidation IT (N=38)	36 (95%)	2 (5%)	0,5

Figure 1. Time from end of RT to cardiac event



	Mean (95% CI)	p
Prior CVD	65,2 months (52,6-77,9)	**<0,01**
Without prior CVD	96,9 months (92,3-101.6)	