

XXXIII CONGRESSO NAZIONALE AIRO

AIRO2023

BOLOGNA,
27-29 OTTOBRE 2023

PALAZZO DEI CONGRESSI

Radioterapia Oncologica: l'evoluzione al servizio dei pazienti



Associazione Italiana
Radioterapia e Oncologia clinica

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Cardiological safety of 5-fraction whole breast irradiation: **SAFE-FORWARD** trial

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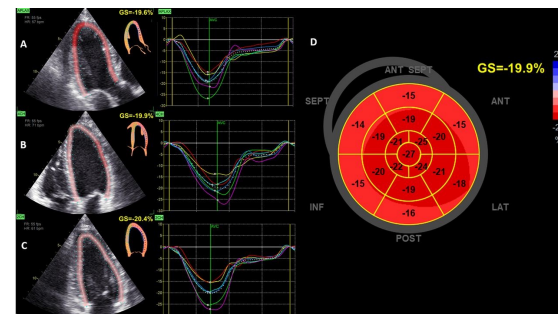
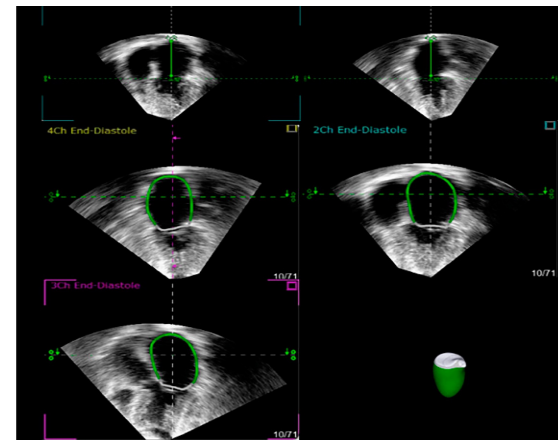
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Disclosure

- I have no conflicts of interest to disclose

Purpose

- Our study aims to **assess heart toxic effect** in patients receiving a **5-fraction (total dose 26Gy)** postoperative radiation therapy (RT) for breast cancer (BC) using a reliable cardiac assessment:
 - standard and 3-dimensional (3D) echocardiography
 - left ventricular (LV) global longitudinal strain (GLS)



Material/Methods

- **SAFE-FORWARD** is an **observational prospective cohort study** (NCT04842409)
- **Inclusion criteria** were:
 1. patients with invasive BC receiving ultra-hypofractionated whole breast irradiation (WBI) (26Gy in 5 fractions)¹ after breast conserving surgery (BCS)
 2. NO cardiovascular comorbidity
 3. NO previous thoracic irradiation/chemotherapy
- Prospective **cardiac assessment for 12 months** (*baseline, at 2-, 6-, and 12-month after RT*)
- **Acute safety profile** is evaluated according to CTCAE (v.5) scales
- **Primary endpoint** → detection of **any subclinical impairment in myocardial function and deformation** (decrease $\geq 10\%$) measured with standard and 3D echocardiography and LV GLS

WBI 26Gy in 5F - Constraints

		Objective	Costraint
PTV	24.7 Gy	$\geq 95\%$	$\geq 90\%$
	27.3 Gy	$\leq 5\%$	$\leq 7\%$
	27.8 Gy	-	$\leq 2\%$
	Max Dose (D0.5cc)	-	≤ 28.6 Gy
Ipsilateral Lung	7.8 Gy	$\leq 15\%$	$\leq 17\%$
Heart	-	as low as possible	-
	6.5 Gy	-	$\leq 5\%$
	1.3 Gy		$\leq 30\%$

1. Brunt et al., Lancet 2020

Results

- 50 women were enrolled in the study
- We analyzed 40 patients who had completed the cardiological assessment at 12 months

Table 1. Population's main characteristics.

Variables	Patients (%)
Age	
<i>median</i>	67 years
<i>range</i>	48-84 years
BMI	
<i>median</i>	23.88
<i>range</i>	15.78 - 30.22
Menopausal Status	
Premenopausal	3 (6%)
Postmenopausal	47 (96%)
Breast side	
Left	27 (54%)
Right	21 (42%)
Bilateral	2 (4%)
Pathological T Stage	
pT1	46 (92%)
pT2	4 (8%)
Pathological N Stage	
pN0-N1mi	43 (86%)
pN1a	2 (4%)
pNx	5 (10%)
<i>range</i>	1-5
DIBH	
yes	11 (22%)
no:	39 (78%)
- <i>poor compliance</i>	18 (46%)
- <i>right breast</i>	21 (54%)
Adjuvant Endocrine Therapy	
yes:	33 (66%)
- <i>Tamoxifen</i>	3 (%)
- <i>AI</i>	30 (91%)
no	17 (34%)

Abbreviations: BMI, body mass index; DIBH, deep inspiration breath hold; AI, aromatase inhibitors

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Results

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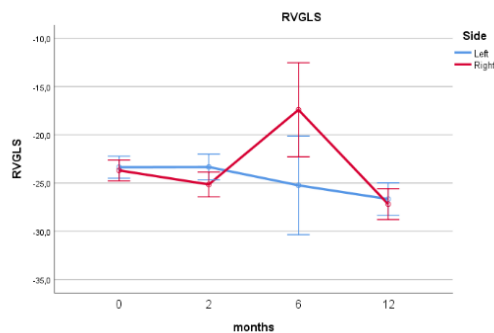
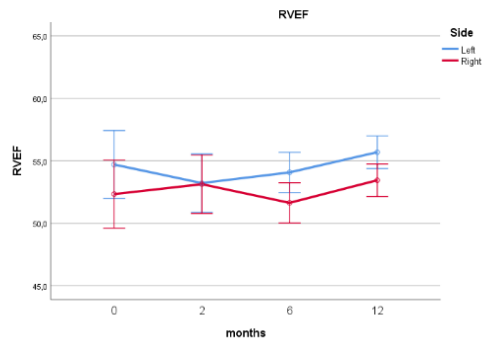
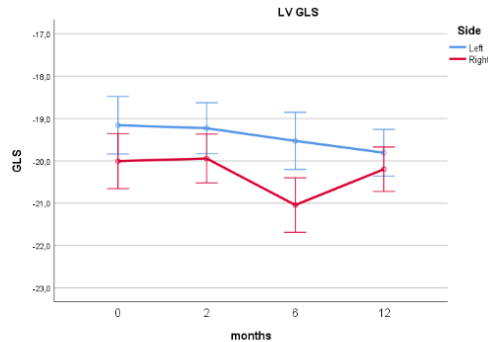
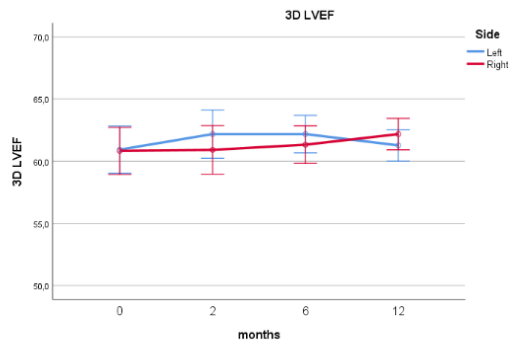
Parameters	Left Breast (median; range)	Right Breast (median; range)
PTV cc	689 (326-1552)	840 (22-1689)
Ipsilateral Lung		
<i>Volume (cc)</i>	1911 (954-2954)	1636 (1222-2459)
<i>MIN Value (cGy)</i>	5.3 (0.4-78)	7.8 (1-20)
<i>MAX Value (cGy)</i>	2623 (2471-2780)	2626 (2516-2892)
<i>Mean Value (cGy)</i>	306 (145-412)	353 (77-420)
Heart		
<i>Volume (cc)</i>	554 (357-833)	609 (453-848)
<i>MIN Value (cGy)</i>	17.5 (2.7-130)	6.2 (3.8-46)
<i>MAX Value (cGy)</i>	2321 (397-2698)	143 (42-248)
<i>Mean Value (cGy)</i>	87.7 (48-275)	40 (25-139)

Fast Forward trial constraints were respected for all patients

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Results

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3D-LVEF remains stable during observation, both for the left- and right-side treated breast

GLS worsened 4% or less, both for the left- and right-side treated breast, and remained in normal range for all the time points

The **only exception** was for **RVGLS** at 6 months for right-sided treatment where it reached a borderline value (-17.4 ± 4.9 SE)

Conclusion

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THE 5-FRACTION SCHEDULE AFTER
BCS IS WELL TOLERATED



THE INTENSIVE 1-YEAR CARDIOLOGICAL
MONITORING SHOWED NO SIGNIFICANT
DIFFERENCES OVERTIME IN CARDIAC
FUNCTIONING

**GRAZIE A
TUTTI PER
L'ATTENZIONE**

