213P Predictive markers of cardiotoxicity associated with Breast Cancer treatment

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Background

- **Cardiotoxicity (CTX)** associated with cancer treatments may mitigate its benefit and limit therapeutic options. Increasing evidence suggests a significant role for high-sensitivity troponin (hs-cTn) and type-B natriuretic peptide (BNP) in the detection of CTX and in the therapeutic (Tx) orientation of cancer patients.
- **The aim of this study is to evaluate the predictive role of these biomarkers in the detection of CTX and, more specifically, the predictive role of hs-cTn in cardioprotective Tx orientation.**

Methods

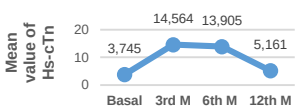
- Unicentric retrospective study of 185 breast cancer patients treated with neoadjuvant and adjuvant chemotherapy (ChT) and anti-HER2 therapy, from January 2017 to September 2019.
- All patients were evaluated by ECG, TTE and analytical study including the values of hs-cTn and BNP before the start of treatment and up to 12 months after.
- CTx = decline in EF (ejection fraction) > 10% from baseline or EF <50%.

Results

Table 1. Sample Characterization.

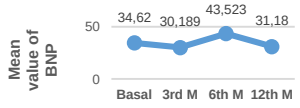
Characterization (n = 185)		n (%)
Gender	Male	-
	Female	185 (100)
Age (years)	Median	50
	Interval	26-76
Cardiotoxicity Risk Score	Moderate (3-4)	3 (1.6)
	High (5-6)	165 (89.2)
	Very high (>6)	17 (9.2)
Intent of Treatment	Neoadjuvant	102 (55.1)
	Adjuvant	83 (44.9)
Radiotherapy	Yes	156 (84.3)
	No	29 (15.7)
Therapeutic Scheme	Anthracyclines (AC)	102 (55)
	AC + anti-HER2 Tx	49 (27)
	Anti-HER2 Tx	28 (15)
	Other	6 (3)
Cardiac Biomarkers	Increase of Hs-cTn (≥14 ng/L)	73 (41.2)
	Significant increase of Hs-cTn (≥34 ng/L)	38 (21.3)
	Increase of BNP (≥100 pg/mL)	9 (5.1)

Grafic 1 and Table 2. Mean value of Hs-cTn and p value variation.



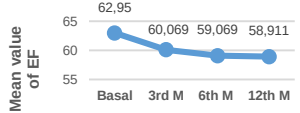
Hs-cTn	Basal	3rd Month	6th Month	12th Month
Basal		**0.001**	**0.041**	0.602
3th Month			1.000	**0.006**
6th Month				0.090
12th Month				

Grafic 2 and Table 3. Mean value of BNP and p value variation.



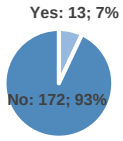
BNP	Basal	3rd Month	6th Month	12th Month
Basal		1.000	1.000	1.000
3th Month			0.463	1.000
6th Month				0.579
12th Month				

Grafic 3 and Table 4. Mean value of EF and p value variation.

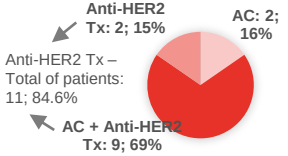


EF	Basal	3rd Month	6th Month	12th Month
Basal		0.141	**0.014**	**0.009**
3th Month			0.362	0.373
6th Month				1.000
12th Month				

→ **Hs-cTn and EF variation values was more significant at the 3rd and 12th month, respectively, while BNP was greater from the 3rd to the 6th month, although not significant.**



Number; Percentage of patients



Number; Percentage of patients

Grafics 4 and 5. CTX Population Characterization - Frequency and Therapeutic Scheme.

Anti-HER2 Tx	⇔	**Cardiotoxicity**	**p = 0.001**
Hs-cTn Increase	⇔	**Cardiotoxicity**	**p = 0.56**
BNP Increase	⇔	**Cardiotoxicity**	**p = 0.60**

→ **The development of CTx was significantly associated with Anti-HER2 Tx but not with Hs-cTn or BNP increase.**

Cardioprotective Tx	⇔	**↓ Cardiotoxicity**	**p = 0.03**

→ **In patients subgroup of Hs-cTn increase (n = 73), the institution of cardioprotective Tx appeared to be associated with a decrease in the occurrence of CTX.**

Conclusions

- **Periodic monitoring of hs-cTn and BNP values combined with the assessment of EF in patients with breast cancer undergoing ChT treatment with AC and / or anti-HER2 Tx will identify patients at risk of CTX in a timely manner and allow early implementation of cardioprotective strategies.**

References: Zamorano JL, Lancellotti P, Rodriguez Muñoz D, et al. (2016). 2016 ESC Position Paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines: The Task Force for cancer treatments and cardiovascular toxicity of the European Society of Cardiology (ESC). *European heart journal*, *37*(36), 2768-2801. Michel L, Rassaf T, Totzeck M. (2018). Biomarkers for the detection of apparent and subclinical cancer therapy-related cardiotoxicity. Journal of Thoracic Disease, 10(Suppl 35), S4282. Role of Troponin and BNP in the Management of Patients With Cancer – American College of Cardiology. Available at: https://www.acc.org/latest-in-cardiology/articles/2019/12/10/15/15/role-of-troponin-and-bnp-in-the-management-of-patients-with-cancer (Acessed in August 2021).

No conflicts of interest

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