131P- Impact of body mass and weight changes after adjuvant treatment in patients with HER2-positive early breast cancer

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Background

- A better knowledge of the **impact of body mass index (BMI) on prognosis and response to treatments** is important to tailor **treatment strategies and survivorship care** in patients (pts) with breast cancer. (BC).
- We assessed the **impact of BMI at diagnosis and weight changes on outcomes of pts with HER2-positive early BC** included in the APHINITY trial, who were randomized to receive chemotherapy (ChT) plus single or dual anti-HER2 blockade.

Methods

- This is **a post hoc, exploratory, individual patient-level** analysis of the **APHINITY trial** (NCT01358877)
- The impact of baseline BMI on invasive disease-free survival (IDFS) and distant recurrence-free interval (DRFI) was assessed.
- Multivariate analyses adjusting for baseline features that were different across BMI subgroups were performed.
- A landmark analysis was done to study the impact of weight changes (5% loss or gain) at 2 years.
- Analysis were performed investigating:
  - 2 categories of BMI (normal weight/underweight [BMI: <25 kg/m2] vs. overweight/obese [BMI: ≥25 kg/m2]
  - 4 categories of BMI (underweight (<18.5 kg/m^2), normal weight (18.5-24.9 kg/m^2), overweight (25-29.9 kg/m^2), and obese (≥30 kg/m^2)
  - BMI as a continuous variable as an extension analysis

Results

- A total of 4804 pts corresponded to the intention to treat population of which, 4787 pts were included in this analysis: 2535 (53%) were normal/underweight and 2252 (47%) overweight/obese.
- BMI≥25 at baseline was associated with older age, postmenopausal status, larger tumors, less treatment with anthracyclines and more use of aromatase inhibitors. There was no statistical difference regarding nodal status, tumor grade, estrogen and/or progesterone receptor.
- BMI≥25 was associated with worse IDFS and DRFI - Table 2, Figure 2. In exploratory subgroup analysis:
  - **BMI ≥25** was associated with **inferior IDFS in hormone receptor negative** and **postmenopausal** subgroups and in patients receiving **trastuzumab + pertuzumab**. (Table 3)
  - **BMI ≥25** was associated with **inferior IDRFI in hormone receptor negative** subgroup and in patients receiving **trastuzumab + pertuzumab**. (Table 4)
- 3967 pts had weight available at baseline and 2y follow up.

Table 1: Weight changes and IDFS and DRFI

	Events (%)	N	Multivariate* HR (95% CI)	Multivariate P value
IDFS				
Total events	265 (6.69%)	3962		
Weight loss	35 (7.00%)	500	1.05 (0.73 to 1.52)	0.793
Stable weight	151 (6.61%)	2283	-	-
Weight gain	79 (6.70%)	1179	1.00 (0.76 to 1.32)	0.996
DRFI				
Total events	179 (4.51%)	3965		
Weight loss	22 (4.40%)	500	0.93 (0.59 to 1.48)	0762
Stable weight	107 (4.68%)	2286	-	-
Weight gain	50 (4.24%)	1179	0.88 (0.63 to 1.24)	0.465

*Multivariate analysis adjusted for: age, menopausal status, tumor size, type of endocrine therapy and Chemotherapy)

Table 2: Prognostic impact of baseline BMI on IDFS and DRFI

	Events (%)	N	Multivariate* HR (95% CI)	Multivariate P value
IDFS				
Total events	506 (10.57%)	4787		
BMI ≥25	264 (11.72%)	2252	**1.27 (1.06 to 1.52)**	**0.009**
BMI <25	242 (9.55%)	2535	-	-
Total events	506 (10.57%)	4787		
Underweight	7 (6.36%)	110	0.65 (0.31 to 1.38)	0.261
Normal weight	235 (9.69%)	2425	-	-
Overweight	163 (11.71%)	1392	**1.24 (1.01 to 1.52)**	**0.036**
Obese	101 (11.74%)	860	**1.27 (1.00 to 1.62)**	**0.046**
BMI (continuous scale)	506 (10.57%)	4787	1.015 (0.99 to 1.032)	0.065
DRFI				
Total events	342 (7.14%)	4787		
BMI ≥25	180 (7.99%)	2252	**1.32 (1.06 to 1.64)**	**0.012**
BMI <25	162 (6.39%)	2535	-	-
Total events	342 (7.14%)	4787		
Underweight	6 (5.45%)	110	0.85 (0.38 to 1.93)	0.705
Normal weight	156 (6.43%)	2425	-	-
Overweight	116 (8.33%)	1392	**1.38 (1.08 to 1.75)**	**0.010**
Obese	64 (7.44%)	860	1.21 (0.90 to 1.62)	0.210
BMI (continuous scale)	342 (7.14%)	4787	1.009 (0.989 to 1.029)	0.385

*Multivariate analysis adjusted for: age, menopausal status, tumor size, type of endocrine therapy and Chemotherapy)

Figure 1: Kaplan-Meier curve for IDFS according to baseline BMI

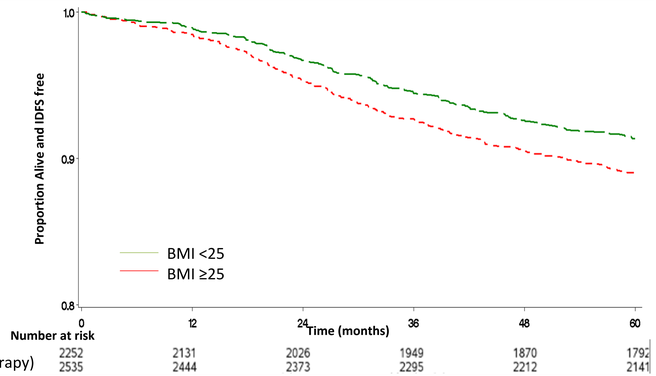

Table 3: IDFS Subgroup analysis

Subgroup	Events (%)	N	Multivariate* HR (95% CI)	Multivariate P value
Hormone receptor-negative				
Total events	195 (11.39%)	1712		
BMI ≥25	109 (13.81%)	789	**1.52 (1.14 to 2.03)**	**0.004**
BMI <25	86 (9.32%)	923	-	
Hormone receptor-positive				
Total events	311 (10.11%)	3075		
BMI ≥25	155 (10.59%)	1463	1.12 (0.89 to 1.41)	0.330
BMI <25	156 (9.68%)	1612	-	-
Interaction test BMI with Hormone receptor status: P value= 0.876				
Postmenopausal				
Total events	259 (10.55%)	2456		
BMI ≥25	158 (11.50%)	1374	**1.30 (1.01 to 1.68)**	**0.038**
BMI <25	101 (9.33%)	1082	-	-
Premenopausal				
Total events	244 (10.54%)	2314		
BMI ≥25	103 (11.88%)	867	1.22 (0.94 to 1.58)	0.135
BMI <25	141 (9.74%)	1447	-	-
Interaction test BMI with menopausal status: P value= 0.963				
Trastuzumab + pertuzumab				
Total events	221 (9.24%)	2391		
BMI ≥25	122 (10.86%)	1123	**1.47 (1.12 to 1.93)**	**0.006**
BMI <25	99 (7.81%)	1268	-	-
Trastuzumab + placebo				
Total events	285 (11.89%)	2396		
BMI ≥25	142 (12.58%)	1129	1.13 (0.89 to 1.44)	0.307
BMI <25	143 (11.29%)	1267	-	-
Interaction test with anti-HER2 treatment: P value= 0.005				

Table 4: DRFI Subgroup analysis

Subgroup	Events (%)	N	Multivariate* HR (95% CI)	Multivariate P value
Hormone receptor-negative				
Total events	129 (7.54%)	1712		
BMI ≥25	72 (9.13%)	789	**1.57 (1.10 to 2.24)**	**0.012**
BMI <25	57 (6.18%)	923	-	-
Hormone receptor-positive				
Total events	213 (6.93%)	3075		
BMI ≥25	108 (7.38%)	1463	1.16 (0.88 to 1.53)	0.302
BMI <25	105 (6.51%)	1612	-	-
Interaction test BMI with Hormone receptor status: P value = 0.838				
Postmenopausal				
Total events	162 (6.60%)	2456		
BMI ≥25	100 (7.28%)	1374	1.37 (1.00 to 1.89)	0.053
BMI <25	62 (5.73%)	1082	-	-
Premenopausal				
Total events	179 (7.74%)	2314		
BMI ≥25	79 (9.11%)	867	1.26 (0.94 to 1.70)	0.128
BMI <25	100 (6.91%)	1447	-	-
Interaction test BMI with menopausal status: P value = 0.540				
Trastuzumab + pertuzumab				
Total events	149 (6.23%)	2391		
BMI ≥25	82 (7.30%)	1123	**1.51 (1.09 to 2.11)**	**0.014**
BMI <25	67 (5.28%)	1268	-	-
Trastuzumab + placebo				
Total events	193 (8.06%)	2396		
BMI ≥25	98 (8.68%)	1129	1.18 (0.88 to 1.57)	0.272
BMI <25	95 (7.50%)	1267	-	-
Interaction test with anti-HER2 treatment: P value = 0.031				

*Multivariate analysis adjusted for: age, menopausal status, tumor size, type of endocrine therapy and chemotherapy

Conclusions

- **In this exploratory analysis, BMI≥25 at baseline appeared to be associated with inferior IDFS and DRFI in pts with HER2-positive early BC, highlighting the importance of preventing overweight and obesity.**
- **Future research assessing the impact of weight changes on IDFS and DRFI is needed to better inform survivorship programs.**

Disclosures

The first author (presenter) has no conflict of interests to declare. Disclosures of co-authors were included in the abstract submission.

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