

A. Aranda-Gutierrez, A. Ferrigno, M. Moncada-Madrado, A. Gomez-Picos, C. De la Garza-Ramos,
F. Mesa-Chavez, H. Diaz-Perez, S. Cardona, R. Ortiz-Lopez, C. Villarreal-Garza

Background

Approximately one third of breast cancer (BC) patients are obese, a fact that has been associated with an increased frequency of aggressive clinicopathological features and worse disease outcomes.

The aim of this study was to evaluate if obesity plays a selective role in disease stage according to molecular subtype.

Methods

Medical records of women diagnosed with BC between January 2013 and December 2015 in a center located in Monterrey, Mexico were retrospectively reviewed.

Patients were grouped by body mass index (BMI; obese: ≥ 30 kg/m² and non-obese: < 30 kg/m²) and clinical stage (early-stage: 0-II and late-stage: III-IV). Associations between variables were examined using Fisher's exact test of independence. The significance level was set at $p < 0.05$.

Results

A total of 821 patients were diagnosed with BC, of which 363 were excluded since information about disease stage was missing. Median age was 51 years (range: 29-88), with 14% classified as young (≤ 40 years).

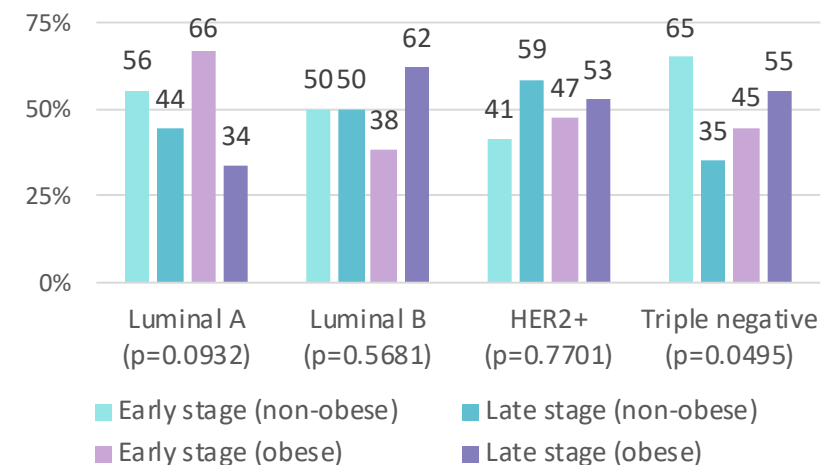
The predominant molecular subtype was luminal-A (55%), followed by triple-negative (23%), and luminal-B and HER2+ (11% each). Most patients presented with early-stage disease (56%).

Table. Patients' characteristics.

		BMI < 30 kg/m ²	BMI ≥ 30 kg/m ²	p-value
Age	≤ 40 years	38 (8%)	26 (6%)	0.284
	> 40 years	205 (45%)	189 (41%)	
Molecular subtype	Luminal A	124 (27%)	128 (28%)	0.306
	Luminal B	30 (7%)	21 (4%)	
	HER2+	29 (6%)	19 (4%)	
	Triple-negative	60 (13%)	47 (10%)	
Clinical stage	Early stage (0-II)	135 (29%)	123 (27%)	0.777
	Late stage (III-IV)	108 (24%)	92 (20%)	

Overall, obesity was not associated with disease stage. However, when stratified by molecular subtype, obesity was associated with diagnosis at a late stage among women with triple-negative disease (55% vs 35%, $p=0.0495$). None of the other molecular subtypes demonstrated an association between stage and BMI.

Figure. Clinical stage at diagnosis stratified by obesity status and molecular subtype.



Conclusions

Obesity was only associated with a late-stage diagnosis in women with triple-negative disease. Although obesity and related comorbidities have been associated with unfavorable characteristics in triple-negative tumors, the molecular factors involved have not been elucidated. Current evidence indicates that increased availability of steroid hormones, insulin-like growth factors, adipokines and inflammatory cytokines could all play an important role in the aggressiveness of these tumors. Future research is needed to confirm these findings and analyze their clinical relevance.