Impact of body mass index on neoadjuvant treatment outcome: a pooled analysis of eight prospective neoadjuvant breast cancer trials.

Abstract:
Obesity is associated with an increased risk of breast cancer (BC) and poorer outcome. We assessed the impact of body mass index (BMI) on pathological complete response (pCR), disease-free (DFS), and overall survival (OS), according to BC subtypes in patients with primary BC treated with neoadjuvant chemotherapy. 8,872 patients with primary BC from eight neoadjuvant trials were categorized according to BMI: underweight (=40 kg/m(2)). BC subtypes were defined as luminal-like (ER/PgR-positive and HER2-negative), HER2/luminal (ER/PgR-positive and HER2-positive), HER2-like (ER/PgR-negative and HER2-positive), and triple-negative (TNBC; ER/PgR- and HER2-negative). pCR rate was higher in normal weight patients compared with all other BMI groups (P = 0.003). Mean DFS and OS were shorter in obese (87.3 months, P = 0.014 and 94.9 months, P = 0.001, respectively) and very obese (66.6 months, P< 0.001 and 75.3 months, P< 0.001, respectively) compared with normal weight patients (91.5 and 98.8 months, respectively) which was
confirmed by subpopulation treatment effect pattern plot analyses and was consistent in luminal-like and TNBC. No interaction was observed between BMI and pCR. Normal weight patients experienced less non-hematological adverse events (P = 0.002) and were more likely to receive full taxane doses (P< 0.001) compared with all other BMI groups. In multivariable analysis, the dose of taxanes was predictive for pCR (P< 0.001). Higher BMI was associated with lower pCR and a detrimental impact on survival. Normal weight patients had the best compliance to chemotherapy and received the highest taxane doses, which seems to be related with treatment outcomes.