The impact of obesity on complete pathologic response to neoadjuvant chemoradiotherapy in rectal cancer patients

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Introduction: Obesity is a major public health problem of epidemic proportions and is linked to the development of a number of malignancies, including colorectal cancer. However, there have been a number of studies that have reported no association between BMI and Rectal Cancer outcomes. The objective of this study was to evaluate obesity and body mass index in predicting complete pathologic response among patients undergoing neoadjuvant chemoradiation and resection for locally advanced rectal cancer.

Methods: A total of 257 eligible patients were retrospectively analyzed, between 1999 to 2013 at National Cancer Institute Mexico, they received chemo-radiotherapy concomitant before standard surgery for rectal cancer. The patients were categorized as obese, overweight, normal weight, or underweight based on BMI according to World Health Organization (WHO) criteria. Pathological complete response (pCR) was defined as no invasive cancer in the rectal or lymph tissue. Chi-squared test were used for detecting the predictors of pCR and determining the relationship between BMI category and pCR rate in the subgroup analysis with respect to other variables.

Results: Median age was 54 years (18-82), 17% of patients were obese, 31% were overweight, and 52% were normal or underweight. 19% (n = 48) of patients were pCR. In multivariate analysis, there was no significant difference in pCR between treatment groups: pCR for obese 10/45 patients, overweight 13/66 and normal or underweight was 25/133 patients (p = 842). Nevertheless for obese patients compared with normal weight patients (OR= 0.81; 95% CI, 0.69 to 1.33 p= 0.039) were significantly less likely to have a pCR. ACE were independent predictors of pCR; patients with carcinoembryonic antigen (CEA) <10ng/ml were more likely to achieve a pathological complete response compared with patients with ACE > 10 ng/ml.

Conclusion: The results showing an association between obesity and a poor pathological response in rectal cancer patients. This analysis suggests that higher BMI should be considered to be a factor of worse response to neoadjuvant chemoradiotherapy and investigating the mechanism of influence of BMI and obesity on treatment response in patients with rectal cancer.