

Effects of pre-treatment 1,25-dihydroxyvitamin D levels on breast cancer patients receiving neoadjuvant chemotherapy

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This study analyzed pre-treatment vitamin D levels of breast cancer patients who had received neoadjuvant chemotherapy (NACT). The primary outcome was pathological complete response (pCR). Vitamin D levels were dichotomized as being either adequate (≥ 20 ng/ml) or inadequate/deficient (<20 ng/ml). Univariable logistic regression models were used to assess the impact of Vitamin D levels and other prognostic factors on pCR. Stepwise selection was used to identify factors for a multivariable logistic regression, with interaction term between vitamin D levels and menopausal status included. Of the 88 patients reviewed, 51.2% (n=45) had inadequate/deficient vitamin D levels and 48.8% (n=43) had adequate vitamin D levels. It was found that menopausal status had a significant interaction with vitamin D levels and pCR: pre-menopausal women with adequate vitamin D levels were significantly more likely than post-menopausal women to achieve pCR (OR=17.697, 95% CI: (3.04, 102.89), $p=0.0014$). The interaction between recurrence, percent tumor shrinkage, and vitamin D levels was analyzed using a multivariable Cox regression

model. 17% (n=15) of the 88 patients recurred. Patients with adequate vitamin D levels whose tumor decreased in size after NACT were significantly less likely to recur than patients with inadequate/deficient vitamin D levels whose tumor decreased in the same amount (interaction $p=0.0045$). These data indicate that adequate vitamin D levels and neoadjuvant chemotherapy may produce an additive effect to yield a higher chance of pCR and a lower chance of recurrence, an effect that is enhanced for pre-menopausal women. Finally the data indicate that vitamin D may provide a protective effect against recurrence particularly when there is a large amount of tumor shrinkage after treatment.

Speaker Biography

Madeline Molot is a senior at Barnard College studying Neuroscience and Behavior. She has performed research at the Dubin Breast Center at Mount Sinai Hospital, as well as at the Barnard Cognitive Development Center and at the NY State Psychiatric Institute of the Columbia University Medical Center. She plans to attend medical school in the future.

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