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DE NOVO POST-DIAGNOSIS VITAMIN D USE AND BREAST CANCER MORTALITY

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Introduction: Experimental data suggests a protective effect of vitamin D on breast cancer progression but epidemiological evidence is emerging. A recent meta-analysis however suggested a large reduction in breast cancer mortality (HR: 0.65; 95% CI: 0.44-0.98)) in those in the highest quartile of circulating 25(OH) D levels compared to the lowest quartile when measured at diagnosis.

Aim and Methods: In this study we investigate, in a large linked national cancer registry and prescribing database in Ireland, associations between vitamin D use initiated after a diagnosis (de novo) in women with stage I-III breast cancer and all-cause and breast cancer- specific mortality (n=5417); see Figure 1. Initiation of vitamin D post-diagnosis was identified from the linked national prescription data (n=2570 (48%) initiating vitamin D). Multivariate cox proportional hazards models were used to estimate hazard ratios (HRs) for associations between de novo vitamin D use and mortality while adjusting for patient, tumour characteristics and treatment.

Results: Initiation of vitamin D was significantly higher among those in receipt of statin, bisphosphonate and anti-estrogen therapy. Those with a perceived better prognosis also had a higher initiation rate (e.g. ER/PR positive and HER2 negative). After appropriate adjustment for confounders, there was a significant association between de novo vitamin D use post-diagnosis (yes/no time-varying) and, breast cancer-specific (HR: 0.69; 95% CI: 0.55-0.86) and all-cause mortality (HR: 0.76; 95% CI: 0.65-0.90). After additional analysis correcting for imbalance between treatment groups using propensity score analysis, a significant association persisted between vitamin D use post-diagnosis and breast cancer-specific mortality (HR: 0.70; 95% CI: 0.52-0.93), but not for all-cause mortality (HR: 0.82; 95% CI: 0.67-1.01).

Conclusion: Breast cancer-specific mortality in de novo vitamin D users post-diagnosis was significantly lower than non-users. Vitamin D has the potential as a non-toxic treatment to improve survival in breast cancer patients.

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