Serum vitamin D concentrations are non-linearly related to breast cancer risk in postmenopausal women

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Introduction

Serum 25(OH)D is commonly used as a biomarker of vitamin D status. Recently, the role of vitamin D in non-calcemic functions has received much attention. In the US, the prevalence of low serum 25(OH)D (<50nmol/L) among postmenopausal women was 53%. Cancer is the second leading cause of death worldwide. Several studies have linked vitamin D deficiency with cancer. It is not known if suboptimal vitamin D concentrations are related to cancer risk in postmenopausal women.

Methodology

- Standardized serum 25(OH)D concentrations were used.
- Breast cancer was self-reported by participants.
- Serum 25(OH)D was stratified into 5 categories based on recommendations of Institute of Medicine and Endocrine Society. Multivariate-adjusted logistic regression analysis was performed to determine association between serum 25(OH)D and breast cancer after adjusting for confounding variables (below).
- Subgroup analyses for various races were also performed. Restrict cubic spline method with three knots at 5th, 50th and 95th were used to analyze the non-linear trend. Statistical significance: p<0.05.

Objective

The aim of this study was to investigate the association between serum 25(OH)D concentration and breast cancer risk in postmenopausal women in the US.

Results

Age, race, education, smoking, alcohol intake, season of the survey, BMI, supplement intake, HRT, physical activity, and PIR were significantly related to serum 25(OH)D (P<0.001).

![Figure 2: Prevalence of serum 25(OH)D in post-menopausal women](image)

![Figure 3: Prevalence of breast cancer in post-menopausal women](image)

![Table 1. Association between 25(OH)D and breast cancer prevalence in post-menopausal women (n=8100)](table)

Conclusion

- A direct association was observed between serum 25(OH)D and breast cancer up to 100 nmol/L.
- It appears that more than 100 nmol/L may be protective against breast cancer in all postmenopausal women and specifically in NHW.
- Controlled trials are needed to study the association between serum 25(OH)D and breast cancer risk and to elucidate the mechanism of vitamin D in cancer pathogenesis in postmenopausal women.

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References