

Racial disparity in vitamin D status may explain racial disparity in survival from estrogen and progesterone receptor-positive breast cancer

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To the Editor,

The recent paper by Rauscher and colleagues reported a hazard ratio for breast cancer death from estrogen and progesterone receptor-positive (ER+/PR+) breast cancer for black versus white women of 4.39 (95% CI 1.76, 10.9, $p = 0.001$) [1]. They also reviewed the related journal literature, noting that other studies also found worse breast cancer survival rates for blacks, and that black ER+ women have more aggressive disease than white women.

Overlooked in the paper was any discussion of the role of vitamin D in reducing risk and increasing survival of breast cancer. In a review published in 2012, it was reported that blacks have poorer survival than whites for 13 types of cancer after consideration of socioeconomic status, stage at diagnosis, and treatment [2]. The case was made that lower mean 25-hydroxyvitamin D concentrations for blacks than whites explained much of the remaining disparities. In the U.S., older blacks have lower 25-hydroxyvitamin D concentrations than older whites, 17 versus 25 ng/mL [2]. For breast cancer, vitamin D adequacy was associated with hazard or risk ratio for survival between 0.42 (0.21–0.82) and 0.75 (0.72–79), while vitamin D deficiency was associated with a hazard ratio of 1.08 (1.00–1.17) and 1.60 (0.96–2.64). The relative risk of death for breast cancer for blacks versus whites for studies considering socioeconomic status, stage at diagnosis, and treatment varied from 1.22 (1.10–1.37) to 2.41 (1.21–4.79). A study in Canada found that increased intake of vitamin D (from the sun and diet)

was consistently associated with a significantly reduced risk of ER+/PR+ tumors [odds ratio 0.76 (0.59–0.97)] [3]. The vitamin D hypothesis is also consistent with the finding in [1] that higher body mass was associated with increased risk of breast cancer death.

While the hazard ratio for ER+/PR+ breast cancer death reported in [1] is much higher than found for breast cancer in general [2], vitamin D status very likely explains a significant portion of the disparity.

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