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539 - NEGATIVE IMPACT OF SERUM VITAMIN D DEFICIENCY ON BREAST CANCER SURVIVAL

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Introduction: It is known that breast cancer is the type of cancer that mostly affects women in the world, both in the developing and developed countries, with about 2.3 million new cases in 2020, comprising 25% of all cancers diagnosed in women. Vitamin D concentration has been studied as a risk and prognostic factor in women with breast cancer; its deficiency is common in women with postmenopausal breast cancer, and some evidence suggests that low vitamin D status increases the risk for disease development. The impact of vitamin D at the time of diagnosis on the outcome of patients with breast cancer is less well understood. In view of the increasing number of breast cancer survivors and the high prevalence of vitamin D deficiency among patients with breast cancer, an evaluation of the role of vitamin D in prognosis and survival among patients with breast cancer is essential. ***Objective:*** The aim of this study was to evaluate the association between serum vitamin D (VD) levels at diagnosis and overall survival (OS), disease-free survival (DFS), and cancer-specific survival (CSS) in postmenopausal women treated for breast cancer. Methods: This is a single-center prospective cohort. The study included patients newly diagnosed with invasive breast cancer between 2014 and 2016, aged ≥45 years, and in amenorrhea for ≥12 months, and VD assessment at the time of diagnosis, before any cancer treatment. Patients were classified into three groups according to serum levels of 25-hydroxyvitamin-D [25(OH)D]: sufficient (≥30 ng/mL), insufficient (between 20 and 29 ng/mL), and deficient (<20 ng/mL). Clinical and anatomopathological data were collected. The primary outcome was OS and secondary outcomes were DFS and CSS. Kaplan-Meier curve and Cox regression model were used to assess the association between 25(OH)D levels and OS, DFS, and CSS. Differences in survival were evaluated by hazard ratios (HRs). The study was approved by the Ethics Committee (CAAE: 71399117.2.0000.5411). ***Results:*** The study included 192 women with a mean age of 61.3±9.6 years at diagnosis, mean 25(OH)D levels of 25.8 ng/mL (ranging from 12.0 to 59.2 ng/mL), and follow-up period between 54 and 78 months. Sufficient VD levels were detected in 65 patients (33.9%), insufficient in 92 (47.9%), and deficient in 35 (18.2%). Patients with 25(OH)D insufficiency and deficiency had a larger proportion of high-grade tumors, locally advanced and with distant metastasis, positive axillary lymph nodes, negative estrogen receptors (ER), and progesterone receptors (PR), and higher Ki67 index ($p<0.05$). The mean OS time was 54.4±20.2 months (range 9–78 months), and 51 patients (26.6%) died during the study period. Patients with VD deficiency and insufficiency at diagnosis had significantly lower OS, DFS, and CSS compared to patients with sufficient values ($p<0.0001$). After the adjustment for clinical and tumoral prognostic factors, patients with serum 25(OH)D levels considered deficient at the time of diagnosis had a significantly higher risk of global death (HR=4.65, 95%CI 1.65–13.12), higher risk of disease recurrence (HR=6.87, 95%CI 2.35–21.18), and higher risk of death from the disease (HR=5.91, 95%CI 1.98–17.60) than the group with sufficient 25(OH)D levels.