Urinary Melatonin Levels and Breast Cancer Risk

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Exposure to light at night suppresses melatonin production, and night-shift work (a surrogate for such exposure) has been associated with an increased risk of breast cancer. However, the association between circulating melatonin levels and breast cancer risk is unclear. In a prospective case–control study nested within the Nurses' Health Study II cohort, we measured the concentration of the major melatonin metabolite, 6-sulphatoxymelatonin (aMT6s), in the first morning urine of 147 women with invasive breast cancer and 291 matched control subjects. In logistic regression models, the relative risk (reported as the odds ratio [OR]) of invasive breast cancer for women in the highest quartile of urinary aMT6s compared with those in the lowest was 0.59 (95% confidence interval [CI] = 0.36 to 0.97). This association was essentially unchanged after adjustment for breast cancer risk factors or plasma sex hormone levels but was slightly weakened when the analysis included 43 case patients with in situ breast cancer and their 85 matched control subjects (OR = 0.70, 95% CI = 0.47 to 1.06). The exclusion of women who had a history of night-shift work left our findings largely unchanged. These prospective data support the hypothesis that higher melatonin levels, as measured in first morning urine, are associated with a lower risk of breast cancer.