BREAST CANCER IN WOMEN, HIGH-VOLTAGE POWER LINES AND MELATONIN

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In a recent study, Feychting et al. (1) observe that among estrogen receptor-positive women (younger than 50 years) the relative risk for breast cancer is significantly increased if those women are living near high voltage power line (exposure cutoff point for ELF magnetic fields >0.1 yT). In their article, Feychting et al. (1) discuss the role of melatonin as an oncostatic agent and propose that electromagnetic fields from high-voltage power lines decrease melatonin which may be a mechanism correlated with cancer development (2).

A publication of Danforth et al. (3) has shown that women with estrogen-receptor positive breast cancer have a nocturnal increase in plasma melatonin significantly lower than control subjects.

From those results, we can propose that women with estrogen receptor-positive breast cancer have a nocturnal increase in plasma melatonin significantly lower than control subjects.

These results could indicate that in women with estrogen receptor-positive breast cancer, the specific decrease of melatonin in those subjects (3) is a supplementary factor which can have a synergistic action with the melatonin decrease due to the electromagnetic fields. This synergistic decreasing action on melatonin may contribute to potential breast cancer development in estrogen receptor-positive women living near high-voltage power lines.

1. Feychting M, Forssen U, Rutquist LE and Ahlbom A(1998): Magnetic fields and breast cancer in Swedish adults residing near high-voltage power lines. Epidemiology 9:392-397.

2. Rieter RJ (1994): Melatonin suppression by static and extremely low frequency electromagnetic fields: relationship to the reported increased incidence of cancer. Rev Environ Health 10:171-186.

3. Danforth D, Lichter A, Demoss E, Cohen M, Chabner B, and Lippman M (1982): Decreased nocturnal plasma melatonin peak in patients with estrogen receptor positive breast cancer. Science 216:1003-1005.

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Also see:

CNN - New evidence links breast cancer to electromagnetic fields - March 24, 1998