

Letter to the Editor

Plasma Testosterone and Breast Cancer

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AN INCREASE in urinary excretion of testosterone has been associated with increased androgenic activity and recurrence of breast cancer in postmenopausal [1] and premenopausal [2] patients after mastectomy. Increased serum testosterone levels have also been reported in a small group of British patients [3] and in postmenopausal Swedish patients [4].

With regard to androgen metabolism, Wang *et al.* [5] reported a decrease in plasma androstenedione following mastectomy, the plasma androstenedione level being correlated with the urinary excretion of 11-deoxy-17-ketosteroids. Despite differences in androgen metabolism related to environmental factors in low- and high-risk populations, if an elevated plasma testosterone level is associated with epithelial hyperplasia and breast cancer [6], similar changes should be evident in Japanese patients with breast cancer.

In a study of the hormone profile in Japanese women, we have compared plasma testosterone levels in non-obese (Body Mass Index 27), healthy postmenopausal women, mean age 58 ± 0.9 yr, age of menopause 49 ± 0.8 yr, with age-matched postmenopausal patients, mean age 60 ± 1.5 yr, age of menopause 48 ± 0.9 yr.

Testosterone was measured by radioimmunoassay with testosterone-19-carboxymethylether bovine serum albumin with a cross-reactivity of 22% for dihydrotestosterone. The sensitivity of the assay was 50 pg/ml, with intra- and interassay variations of 6 and 9% respectively.

As shown in Fig. 1, plasma testosterone levels were significantly higher ($P < 0.01$) in patients than in healthy Japanese women. Lower plasma

levels of testosterone also occurred in healthy postmenopausal Japanese than in Caucasian women ($P \leq 0.01$), which supports our previous findings in premenopausal Japanese women [7].

Although no distinct difference in steroid hormone metabolism has been reported in alveolar ductal cells, the presence of androgen receptors [8] and the antiestrogenic action of testosterone on the estrogen-dependent enhancement of cytoplasmic progesterone receptors in

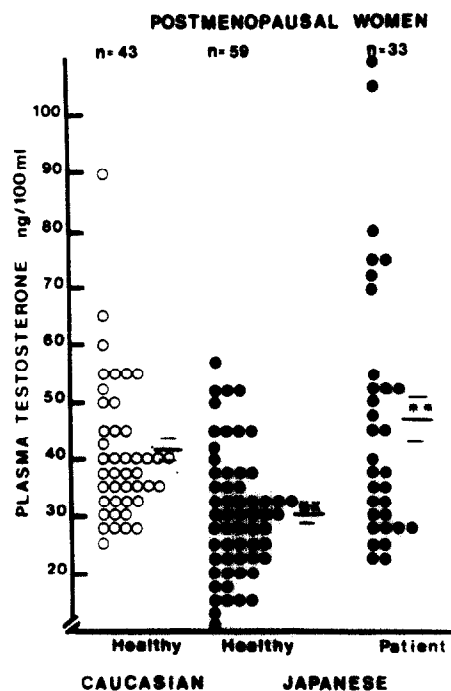


Fig. 1. Plasma testosterone levels in healthy postmenopausal Caucasian and Japanese women and in postmenopausal Japanese women with breast cancer. Plasma testosterone levels: Japanese patients vs healthy women significantly increased, * $P < 0.01$; Healthy Japanese vs healthy Caucasian women significantly decreased, $\times \times P \leq 0.01$.

MCF-7 human breast cells [9] suggest that testosterone plays a role in the development of breast cancer. The presence of elevated levels of testosterone in breast fluid in premenopausal

women with breast cancer [10] supports such a role. Evidence of elevated plasma testosterone after mastectomy may well be an indicator of relapse [2].

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