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The effect of escitalopram on anastrozole plasma concentrations in breast cancer patients

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Introduction: Anastrozole, an aromatase inhibitor, catalyses the conversion of androstenedione to estrodiol in peripheral tissues in postmenopausal women through inhibition of the cytochromal *P*450 enzyme. Genetic variability of the metabolizing enzymes, CYP3A and UGT1A, along with BMI may affect the pharmacokinetics and pharmacodynamics of anastrozole. Although depressive mood disorder is commonly observed in breast cancer patients and escitalopram, selective serotonin transport inhibitor, is one of the used agent in the treatment, pharmacokinetic interaction through the CY3A4 that metabolizes both anastrozole and escitalopram has not been investigated before.

Aim: In this study we aimed to provide data showing the effects of escitalopram on anastrozole levels in breast cancer patients that may results in toxicity or in inefficacy.

Methods: Escitalopram prescribed19 female breast cancer patients on the treatment of anastrazole more than one month were included in the study. Plasma anastrozole and serum estradiol concentrations were measured before and one month after escitalopram use. Because there were inter individual variations between the last anastrozole dose and blood sampling, maximum plasma concentrations (Cmax) were back extrapolated by using the following pharmacokinetic formula LogC= LogCmax-k. t1/2.

Results: The mean Cmax of anastrozole was 27±2.9 ng/mL in 19 patients. There was no significant difference in Cmaxanastrozole level in respect to previous treatments, BMI (29.9 ≤ vs 29.9>) and other drugs used currently. 12 of 19 patients completed one month escitalopram treatment and the mean Cmax of anastrazole increased from 25.2±3.1 ng/mL to 37.3±3.4 ng/mL after escitalopram ($p<0.05$). The median estradiol level of 19 patients were <10 pg/mLand no significant change was occurred after escitalopram administration. While the Cmaxof anastrozole increased significantly ($p<0.01$). After escitalopram in obese patients (BMI > 29.9), no significant change was observed in non-obese patients (BMI ≤ 29.9).

Conclusion: Escitalopram increases anastrozole level and this effect is more prominent in obese than non-obese patients. Pharmacokinetic interaction through CYP 3A4 may be the responsible from these findings. The effect of BMI on this interaction may be explained by the redistribution of both drugs from adipose tissue.

Biography

Hazan Ozyurt is specialist in Radiation Oncology and has a PhD degree in Pharmacology and Clinical Pharmacology. She has published papers about normal tissue effects of radiation, the clinical outcomes of rectal and cervical cancer after chemoradiotherapy in respect to genetic characteristics of tumors and GABAergic and nitrergic systems of brain.

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