The relationship between serum E2 level and recurrence during endocrine therapy for ER positive pre-menopausal early breast cancer patients

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Aim: 10-year tamoxifen as adjuvant endocrine therapy become common for pre-menopausal ER-positive breast cancer patients according to the report from ATLAS trial (SABCS 2012) or aTTom study (ASCO 2013). On the other hand, it is generally believed that exposure to estradiol is strongly associated in breast cancer, however there are different opinions among experts voting in the duration of using LHRH agonist. The aim of this study is to evaluate the recurrence factor for endocrine therapy in ER positive pre-menopausal breast cancer patients.

Methods: We chose 193 cases of premenopausal ER-positive early-stage breast cancer patients who received LHRH agonist and tamoxifen with 45 year-old or more younger onset. The median age was 40 years old (24-45) when the treatment started. They included 98 cases who were received pre-operative or post-operative chemotherapy as adjuvant systemic therapy. We studied about the relationship of local recurrence or distant metastasis and the duration of administration of the drug. We monitored of E2, FSH concentrations in blood before, during and after treatment. The median follow up period was 68 months (9-324 months).

Results: We obtained the data of E2 dynamics during endocrine therapy from patients’ sample. During LHRH agonist and tamoxifen therapy, serum E2 level decreased to the postmenopausal level, less than 31.0 pg/ml. However E2 concentration with tamoxifen and without LHRH agonist elevated to the average 58.1 pg/ml (10.0-5248.0 pg/ml). The duration of LHRH agonist was not the most important factor of breast cancer recurrence. There was a relation between continuous high serum level of E2 after LHRH agonist and metastasis regardless of the menstruation state. This phenomenon could be explained by the similar mechanism of low dose estrogen therapy after AI therapy for metastatic breast cancer.

Conclusions: There might be association with breast cancer recurrence and E2 concentration in premenopausal ER-positive early-stage breast cancer.

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