

BREAST CANCER STAGE III C: THE PHARMACOGENETICS APPROACH TO BREAST CANCER TREATMENT

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Introduction - Purpose : We inspected breast cancer (BC) stage IIIC patients that had treated from 2011 to 2013 years in the National Center of Oncology. Among the 69 patients with BC stage IIIC that received standard chemotherapy with FAC, FEC, AT, AC and TAC only 44.9% had radical mastectomy (RM), 55.1% patients had no benefit from treatment. The TUBB3, ERCC1, RRM1 and TYMS genes, that is considerable candidate of reason to resistance of some chemotherapeutics agents, demonstrated differential expressions in the patient tumor materials. The goal of the study was to investigate the efficiency of non-adjuvant chemotherapy that used results of expression level data of TUBB3, ERCC1, RRM1 and TYMS genes

Methods - Tools : The first patient was included in the study on the 30th June in 2014. 37 BC patients with stage IIIC were collected in the inspected group from 2014 to January 2016. The patients are choosing by casual. All patients had standard methods for diagnosis and TUBB3, ERCC1, RRM1 and TYMS genes expression level result. RNAm expression levels of these genes were examined using semi-quantitative RT-PCR. TUBB3 expression high level was in 75.7% patients, ERCC1 gene expression was in 21.6% patients. Chemotherapy scheme has been designed: non-adjuvant scheme during 4-6 cycles with gemcitabine 1250 mg/m² per the first and eight days) + cisplatin 75 mg/m², only the first day) + surgery + 2 adjuvant scheme the same as non-adjuvant) + radiology treatment + hormone therapy depending on biological subtypes). This scheme has been already used for metastatic, local advance and triple-negative BC as first line treatment.

Findings : At present, all inspected patients have effective results. 27 73.0%) patients of 37 had RM, in 4 patients are planned RM, 4 patients refused of RM and 2 patients afterwards refused of the treatment. The results of treatment were estimated by morphological analysis of tumor regression. Therapy-induced tumor regression was: complete response in 6 22.2%) patients, partial response in 17 63.0%) patients and minimal response in 4 14.8%) patients.

Discussion : In conclusion, the breast cancer stage IIIC is “desolation” form of BC and request special approach for treatments. We think that it is available to use this non-adjuvant chemotherapy with the gemcitabine + cisplatin that based on expression rate of biomarkers such as TUBB3, ERCC1, RRM1 and TYMS for increasing outcome of the therapy. BC stage IIIC is a systemic disease and can metastasis any time, it is possible to divide treatment process into 2 parts, the one is before surgery, the second is after surgery. We recommended alternation of the non-adjuvant and adjuvant chemotherapy, after radical surgery and radiotherapy following hormone therapy that depends on biological subtype of the breast cancer stage IIIC patients.

Keywords: breast cancer, non-adjuvant chemotherapy, gemcitabine, cisplatin, first line treatment