

10th International Conference on

Clinical and Cellular Immunology

August 06-07, 2018 | Madrid, Spain

Pharmacogenomics merges with immunotherapy as world leader in cancer therapy

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The most common cancer in women is breast cancer which is observed in both developed and less developed world. In the report published earlier for statistics of breast cancer, the number of new diagnosed cases accounted for 882,900 whereas death counted because of this disease was 324,300. The original belief is that breast cancer is a disease associated with women from developed world, however the recent data contradicts the concept indicating 50% of new breast cancer cases and 58% of deaths because of breast cancer is reported from less developed countries. Traditional method of assessment of risk of breast cancer in women is measured by considering family history, pre-existing conditions, and previous treatments. It also include reproductive and endocrine factors such as the use of oral contraceptives, never having children, and a long menstrual history. There is significant evidence suggesting that hormone replacement therapy for post-menopausal women increases risk for breast cancer, both ductal and lobular breast cancer. Life style factors including drinking, obesity, physical inactivity, and use of menopausal hormone therapy have considerable association in risk of developing breast cancer. Advanced studies in breast cancer has classified this disease into four subtypes: Luminal A (ER+/PR+/HER2-, grade 1 or grade 2), Luminal B (ER+/PR+/HER2+, or ER+/PR+/HER2- grade 3), HER2 overexpression (ER-/PR-/HER2+), and triple negative breast cancer (TNBC, ER-/PR-/HER2-). Luminal A subtype has a good prognosis with least resistance to endocrine therapy hence the endocrine therapy model is alone used for patients under this subtype. Cancers with high rate of tumor proliferation with HER2 negative are classified under subtype Luminal B, and the treatment includes therapy + chemotherapy. On the other hand cancers with HER2-positive Luminal B subtype are normally treated with chemotherapy + anti-HER2 treatment + endocrine therapy. Chemotherapy + anti-HER2 treatment is the principal recommended treatment for HER2 overexpression subtype with poor prognosis and rapid progression. The negative expression of ER, PR and HER2 in TNBC has unique biological characteristics and strong heterogeneity, no standard treatment but chemotherapy is suggested for the subtype. In the decision making for treatment of breast cancer, clinical and histopathologic characteristics play critical roles since many years. The role of pharmacogenetics in the personalization of breast cancer therapy has relevance in the management of breast cancer.

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