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Androgen receptor expression in triple negative and non-triple negative and its relation to clinical, Pathological and ethical features

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Background: Breast cancer is the most common tumor among women. It constitutes 33% of all tumors in women in Israel. In addition to stage of the disease, other detective factors such as Estrogen receptors (ER) and Progesterone receptors (PR), Human epidermal growth factor receptor 2 (HER2) and proliferation index (KI67) are examined to determine the treatment for metastatic disease and for the adjuvant therapy. Despite a good prognosis of breast cancer about 10-15% of breast tumors do not contain ER, PR, HER2. This group of is more, aggressive, called Triple negative (TN) tumor. In TN tumors the treatment is mainly chemical therapy, and the survival is lower than other types (Non triple negative: NTN) of breast cancers. Androgen receptor (AR) receptor is very important in prostate cancer and forms the basis of hormonal treatments for prostate cancer. AR can also be present in some breast cancer patients. This study examined AR levels in patients with TN breast cancer in order to evaluate whether AR could be used as a prognostic or therapeutic factor in patients with TN breast cancer

Methods: Demographic, clinical and pathological data were collected from the files of breast cancer patients treated at the Oncology Institute at Ziv Medical Center, Israel, between 2013 and 2020. Tissue samples were taken from the tumors at the Ziv Pathological Institute which were stored in paraffin. The evaluation of AR in breast cancer tissues was done by immunohistochemistry test. 55 TN cases were examined along in addition 90 cases with NTN were examined for comparison.

Results: The mean age of the patients in the TN group was 56.9 ± 16.2 compared with 59.8 ± 13.5 years in the NTN group. 83.6% were Jewish and 16.4% Arab. 36.4% of TN patients were of childbearing age. 61.8% of the tumors in TN were Grade 3 compared to 32.2% in the NTN group (P = 0.001). Ki67 was 57.4 ± 27.8 in TN tumors and 24.9 ± 25.4 in NTN (0.001 <P =). In 69.1% of TN patients AR was found to be negative compared to 26.7% in NTN (P = <0.001). AR was found to be high in 9% of TN patients and in 72.8% in NTN who survived 5 years without disease (P = <0.001). Negative AR was found in 75% of the patients who died from the disease in both groups, Positive AR was found in 30.9% of TN tumors compared to 73.3% in NTN (P = <0.001

Conclusions: The AR receptor has a prognostic importance in breast cancer. We found that positive AR is more common in NTN patients than in TN. Survival of patients with low expression of AR is lower. The test is also relatively inexpensive, and it could be possible to be checked in all patients with TN breast cancer all over the hospitals. On the basis of the recent results, we suggest performing a new multicenter study for the treatment of AR-positive TN patients who failed conventional therapies with AR based hormone therapy.

Recent Publications

1.   Jamal Zidan, Michelle Leviov, Iryna Kuchuk, Gil Bar-Sela, Ayelet Shai, Olga Kazarin, and Nasralla Suheil; The use of clinical impact of the breast cancer intrinsic subtype- Prosigna assay for adjuvant treatment decision in early breast cancer with hormone receptor positive and HER-2 negative Middle East women. Journal of Clinical Oncology 2022 40:16_suppl, e12527-e12527

2.   Vogelzangs N, Beekman AT, van Reedt Dortland AK, Schoevers RA, Giltay EJ, de Jonge P, Penninx BW. Inflammatory and metabolic dysregulation and the 2-year course of depressive disorders in antidepressant users. Neuropsychopharmacology. 2014 Jun;39(7):1624-34. doi: 10.1038/npp.2014.9

3.   Zidan J, Karen D, Stein M, Rosenblatt E, Basher W, Kuten Apure versus follicular variant of papillary thyroid carcinoma: clinical features, prognostic factors, treatment, and survival. Cancer 97(5): 1181-1185

Biography

Jamal Zidan earned his Doctorate in Medicine (MD) at the Semmelweis University in Budapest, Hungary. He has finished his specialization in Oncology at the Oncology department at Rambam Medical Center in Haifa, Israel. Since 2006 he was Associat Professor at the Faculty of Medicine at the Technion University in Haifa, Israel. At 2009 he was a Visiting Scientist in Biological Regulation Department in Weizmann Institute of Science, Rehovot. Israel. Since October 2011 he is a professor at the Faculty of Medicine in the Galilee, Safed, Bar-Ilan University, Israel, and since June 2013 he is Full Professor of Medicine.

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