

GERMLINE BREAST CANCER SUSCEPTIBILITY GENES MUTATION (BRCA) AND EXPRESSION OF PROGRAMMED DEATH LIGAND-1 (PDL-1) IN TRIPLE-NEGATIVE BREAST CANCER EGYPTIAN PATIENTS AND CORRELATION WITH CLINICOPATHOLOGICAL CHARACTERISTICS

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INTRODUCTION

Triple-negative breast carcinoma (TNBC) is one of the subtypes of breast cancer, known to have a poor prognosis. The most common risk factor is the family history of breast carcinoma, with germline mutation on BRCA1/2 genes being frequently found in comparison to other subtypes. However, non-metastatic TNBC is highly heterogeneous; two subgroups of patients can be described: on the one hand, patients with high-risk disease, not achieving pathological complete response (pCR) despite intense neoadjuvant treatment, and on the other hand, a second group of patients with good prognosis, achieving pCR with less pre-surgery treatment. There is an ongoing effort to de-escalate and escalate therapy, tailoring treatment better to the patients who need it at the right time.

AIM OF THE WORK

This study aimed to assess the germline BRCA 1/2 mutation and PD-L1 expression in patients with non-metastatic TNBC presented at the Alexandria Clinical Oncology department. It also sought the correlation of the above biomarkers with the clinicopathological characteristics and the response to neoadjuvant chemotherapy.

PATIENTS AND METHODS

This is a retrospective cohort study of fifty-one non-metastatic TNBC patients who visited the Alexandria Clinical Oncology department from January 2016 to December 2022. Clinical data and germline BRCA mutation status were collected from the archive and the patients, the latter was performed during routine practice.

Among the fifty-one patients, forty-one paraffin blocks of pretreatment biopsies or pretreatment surgical specimens, found in the pathology archive and/or retrieved from patients, were used to examine the PD-L1 by immunohistochemistry (IHC) using the Combined positive score (22C3 pharma DX).

RESULTS

The study found that 27% of triple-negative breast cancer patients are less than 40 years, with a mean age of 47 years, and around 50 % are obese. Being obese was associated with residual disease after neoadjuvant chemotherapy($p<0.04$).

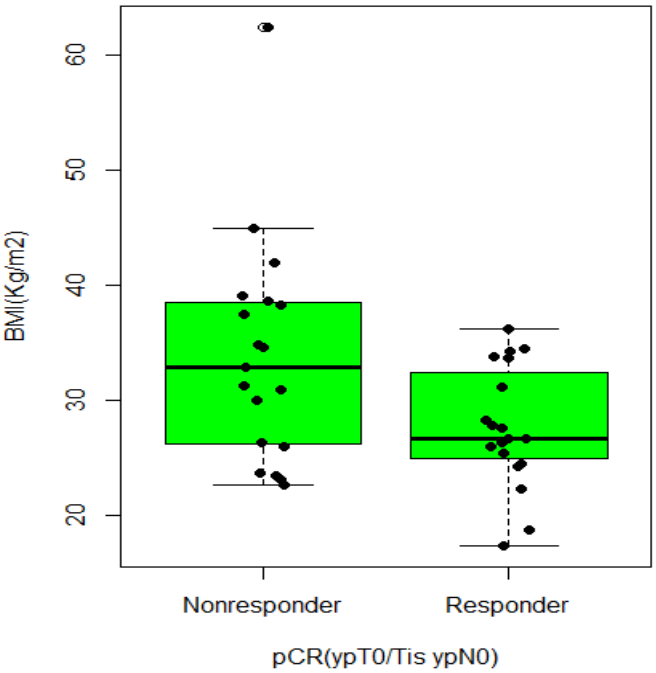


Figure 1: BMI and response to treatment

The study found six patients with germline BRCA1/2 mutation out of fifty-one, a prevalence of 11.7%, the age ranged from 33 to 49 years, with a mean age of 42 years. The current study was able to demonstrate the association with family history ($p<0.001$), but no statistical significance could be found with age, Ki67, grade and stage.

The results of this study show a higher rate of negative PD-L1 expression in non-metastatic TNBC Egyptian patients. For patients, whose PD-L1 expression is positive, there is weak expression of PD-L1 with 75% of patients not exceeding PD-L1 combined positive score equals to 20%.The study found no statistically significant difference in PD-L1 expression between patients who achieved pCR and those with residual disease ($p=.475$ NS).

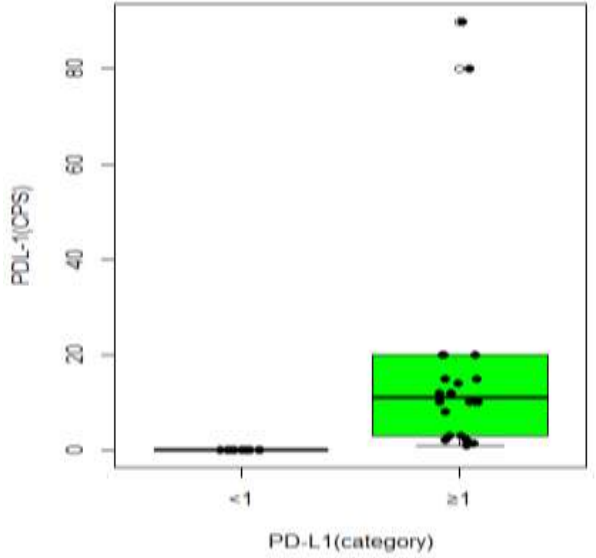


Figure 2: PD-L1 category

CONCLUSION

- The study found that high BMI is strongly associated with less chance of response to neoadjuvant treatment in patients with triple-negative breast cancer The study highlighted the role of germline BRCA mutation testing in patients with a family history of cancers. The study indicated that tumor microenvironment in non-metastatic TNBC Egyptian patients may differ from Western patients, with less PD-L1 expression.