Letter to the Editor

Molecular Subtyping of Triple Negative Breast Cancer (TNBC): An approach to improving treatment response and survival outcome

Jude Ogechukwu Okoye

Histopathology Unit, Department of Medical Laboratory Science, Faculty of Health of Health Sciences and Technology, Nnewi Campus, Anambra State, Nigeria.
Email: jog.okoye@unizik.edu.ng

Dear Editor,

I read with interest an article which revealed a preponderance of triple negative breast cancer (TNBC; 62.3%) in Uyo, Southern Nigeria.[1] Recent studies also documented high prevalence of TNBC in Northern Nigeria (46.6 to 52.6%) and Southern Nigeria (65 to 87%) when compared with other countries.[2,3] Triple-negative breast cancer (TNBC) is an aggressive and invasive heterogeneous type of tumors that accounts for 15 to 20% of all female breast cancers worldwide.[1] The tumours are negative for estrogen and progesterone receptors and lack human epidermal growth factor receptor 2 amplification. Sung et al. stated that the risk of having TNBC varies with birthplace, especially among black women.[4] The tumour is more frequently diagnosed in Nigerian women than patients of European ancestry,[5,6] especially those below the age of 60 years.[1,2,7] According to Zheng et al., Nigerian women with TNBC are 23.4 and 10.3 times more likely to have BRCA1 and BRCA 2 mutations, respectively.[7] They also opined that BRCA mutations greatly influence invasiveness of TNBC than other gene mutations. This suggests that patients aged 60 years or less should be tested for the mutations.

Few patients with TNBC respond to primary treatment options such as surgery, anthracycline- and taxane-based chemotherapy, and radiation therapy. This is because high rate of progression, reoccurrence, relapse and death in less than a year following treatment.[8] Survival rate in high resource countries is greatly improved owing to fact that TNBCs are further subtyped to inform improved new molecular target therapies. Identifying patients with tumor-infiltrating lymphocytes (TILs; CD8+ TILs or a high CD8+/FOXP3+ ratio) and those expressing programmed death-ligand 1 (immune evasion molecules) in tumor microenvironment informs prognosis and molecular based therapeutic targets.[5] Sadly, most Nigerian patients cannot afford the already subsidized fee for the hormonal-based subtyping, let alone paying for the current molecular technique for subtyping TNBCs. The different subtypes of TNBC include: 1. Basal-like subtype (BL 1 and 2); it accounts for 50 to 75% of all TNBC. Basal-like 1 is associated with an elevated DNA damage response, p53 and BRCA1 mutations, retinoblastoma gene inactivation, high Ki67 expression, and downregulation of B cell, T cell and natural killer cells. 2. The luminal androgen receptor (LAR) subtype; it has 10 fold expression of androgen receptor than the other subtypes. 3. Mesenchymal and mesenchymal stem-like subtypes; possess high motility and cell differentiation while interfering with EGFR, calcium signaling, G-protein receptors. 4. Immunomodulatory subtype; it is another type of basal-like subtype with high STAT genes and activated immune (TILs) cells. Specific therapies for basal-like subtype 1 (BL1), basal-like subtype 2 (BL2), Immunomodulatory subtype (IM), Mesenchymal subtype (M), Mesenchymal stem cell-like subtype (MSL) and Luminal subtype expressing androgen receptor (LAR) include cisplatin and poly-AD-ribose polymerase (PARP) inhibitors, mToR

and Growth factor inhibitors, cisplatin and PARP inhibitors, NVP-BEZ235 (a PI3K/mTOR and growth Src factor inhibitor), dasatinib (an abl/src inhibitor), and bicalutamide (AR antagonist), respectively.[9] Further molecular testing of all TNBCs will reduce wastage of time and resources, and improve the survival outcome of patients.

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Conflicts of interest

There are no conflicts of interest.

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