Research Journal of Oncology

Open access Commentary

Neoadjuvant and Adjuvant Therapies in Breast Cancer

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DESCRIPTION

Breast cancer is the leading cause of cancer death in women and the second leading cause of cancer death after lung cancer. Assessment of registry data suggests that incidence and mortality vary widely by race, ethnicity, and socioeconomic status. There are a number of well-established risk factors that influence not only the overall risk of Breast cancer, but also the risk of specific molecular subtypes of Breast cancer. Other factors contributing to disparities in outcomes include specific populations experiencing declining quality of care. Breast cancer is the most commonly diagnosed and deadliest type of cancer in women worldwide. Currently, the origin of cancer stem cells, cancer cell heterogeneity, mechanisms of cancer metastasis, and drug resistance are the most important questions to be addressed. Chinese researchers recently made new discoveries in basic Breast cancer research, particularly related to cancer stem cells, cancer metabolism, and the microenvironment. These efforts have improved our understanding of drug resistance and metastasis and uncovered new biomarkers and therapeutic targets.

Breast cancer has a very high incidence in women, and its morbidity and mortality are the highest among female tumors. With the development of medicine, the clinical application of neoadjuvant chemotherapy has brought new hopes for the treatment of Breast cancer. Although the efficacy of neoadjuvant chemotherapy has been confirmed, drug resistance is one of the main reasons for treatment failure, making Breast cancer difficult to treat. In this article, we describe recent research advances that mediate drug resistance in Breast cancer cells, focusing on multiple mechanisms of action. Drug-metabolizing enzymes can mediate catalysis to inactivate chemotherapeutic agents and develop drug resistance. Drug efflux systems can reduce drug concentration in Breast cancer cells. The combination of the glutathione detoxification system and platinum agents can make Breast cancer cells drug-resistant. Changes in drug targets have reduced the effectiveness of receptor blockers. Furthermore, autophagy, epithelial-mesenchymal junctions, and the tumor microenvironment may all contribute to the development of Breast cancer cell resistance. Based on relevant studies on existing drug resistance mechanisms, current treatment regimens for reversing resistance to neoadjuvant chemotherapy in Breast cancer were explored and potential drug targets were analysed to identify new drug targets for reversing resistance. Ideas and strategies are provided.

Molecular analysis indicates that Breast cancer is divided into several subtypes based on microarray technology. Patients diagnosed with Breast cancer may receive adjuvant or neoadjuvant chemotherapy, depending on tumor size, hormone receptors, and breast-conserving wishes. Patients with positive estrogen and progesterone receptor status benefit from treatment with selective estrogen receptor modulators, such as tamoxifen or aromatase inhibitors, based on their menopausal status and risk of relapse. Targeted drugs such as trastuzumab and pertuzumab are used in combination with chemotherapy in Breast cancer patients. Triple-negative Breast cancer is a unique subtype that lacks a specific target, and its treatment primarily involves chemotherapy. This article provides an overview of current clinical approaches to the management of patients diagnosed with Breast cancer receiving neoadjuvant or adjuvant chemotherapy. Despite therapeutic advances, Brain metastases in patients with triple-negative subtype Breast cancer remain a therapeutic challenge.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

Received:	02-January-2023	**Manuscript No:**	IPRJO-23-15634
Editor assigned:	04-January-2023	**PreQC No:**	IPRJO-23-15634 (PQ)
Reviewed:	18-January-2023	**QC No:**	IPRJO-23-15634
Revised:	23-January-2023	**Manuscript No:**	IPRJO-23-15634 (R)
Published:	30-January-2023	**DOI:**	10.36648/iprjo-7.1.03

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Citation Dong L (2023) Neoadjuvant and Adjuvant Therapies in Breast Cancer. Res J Onco. 7:03.

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