

Role of Caspase-Cleaved Cytokeratin 18 as a Potential Molecular Biomarker for Monitoring Chemotherapeutic Response in Breast Cancer.

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Among women, one of the most diagnosed cancers is Breast Cancer. It has made significant progress in hormone therapy, systemic chemotherapy and targeted therapy since the last decade. A widely accepted standard treatment for locally advanced and inflammatory breast cancers is Neoadjuvant chemotherapy. It is used for patients with pathologic complete response (pCR) generally having better treatment outcomes and better survival rates.

Main Areas

Cytokeratin 18 as a biomarker: Cytokeratin 18 (CK 18) is an important component of the epithelial cell structure and plays a valuable role in cellular processes like of mitosis and proliferation. Hence it plays the role of biomarker. The caspase-cleaved (M-30) and uncleaved (M65) CK fragments appear at elevated levels in the blood serum during apoptosis and necrosis. Hence these serum levels of these respective fragments can be used as markers for the purpose of diagnosis, prognosis, or treatment response prediction.

Monitoring chemotherapeutic response: This is another key factor, regarding which several studies have shown that caspase-cleaved CK18 levels in blood correlate with tumors and response to therapy in cancers including breast cancer. In breast cancer patient serum, docetaxel chemotherapy induces increased levels of ccCK18 which indicates apoptosis while anthracycline-based therapies lead to increase in uncleaved CK18 which suggests induction of necrotic cell death.

Thus, measuring the levels of ccCK18 in blood serve as a molecular biomarker, both for disease monitoring and prediction of patient's response to breast cancer chemotherapy.