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Potential clinical implications of breast tumor kinase in ER-positive breast cancers

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Breast cancer is a heterogeneous disease that can be stratified based on the expression of molecular markers such estrogen receptor (ER), progesterone receptor and epidermal growth factor receptor 2. The movement toward targeted therapies has led to the development of drugs that block the function of some of these receptors as well as proteins associated with cancer formation and progression, including some non-receptor tyrosine kinases. Breast tumor kinase (BRK) is a non-receptor tyrosine kinase expressed in the majority of human breast tumors and breast cancer cell lines, but its expression has not been detected in normal mammary gland. The overexpression of BRK has been shown to sensitize mammary epithelial cells to mitogenic signaling and to promote cell proliferation and tumor formation. However, there are still several unanswered questions about the cellular and physiological roles of BRK and its clinical implications in breast cancers. The author will discuss recent insights into the role of BRK in breast tumor progression as well as the potential clinical implications of BRK in anti-hormonal drug resistant ER-positive breast cancers.