Prognostic worth of Nrf2/BACH1/HO-1 signals in the development of breast cancer

Precious Barnes,

Department of Physician Assistant Studies, School of Allied Health Sciences, College of Health and Allied Sciences, University of Cape Coast, Cape Coast, Ghana.

Abstract

Nrf2/ BACH1/ HO-1 signals have been implicated in the development and progression of tumors. However, there has been no comprehensive analysis of their expressions in breast cancer. This study evaluated Nrf2/ BACH1/ HO-1 signals expression and its clinical significance in breast cancer.

114 female breast cancer of different pathologic parameters and non-cancerous tissues were evaluated for Nrf2/ BACH1/ HO-1 signals expression using immunohistochemistry and western blot. The relationship connecting Nrf2/ BACH1/ HO-1 expression and clinicopathologic factors were assessed using the chi-square test.

Nrf2 protein in cancerous tissues (74%) was significantly higher than in the non-cancerous tissues (43% $p < 0.002$), BACH1 expression in cancerous tissues (61%) was significantly lower than that of non-cancerous tissues (20% $p < 0.031$) and HO-1 protein expression in cancerous tissues (67%) was highly significant than in the non-cancerous tissues (17% $p < 0.001$). The expressions of Nrf2 and HO-1 significantly correlated with tumor grade whilst BACH1 was significantly associated with tumor stage ($p < 0.05$).

Nrf2, BACH1 and HO-1 play key roles in the growth and development of breast cancer and can serve as probable biological markers for breast cancer diagnosis, prognosis as well as therapeutic targets.

Keywords: Breast cancer, Nrf2, BACH1, HO-1, Tumor grade, Tumor stage