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The Impact of the effectiveness of GATA3 as a prognostic factor in breast cancer

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Running Title: GATA3 is an effective prognostic factor for ER+ breast cancer patients

Abstract

The transcription factor GATA3 plays a significant role in mammary gland development and differentiation. We analyzed expression of GATA3 in breast cancer (BC) cell lines and clinical specimens from BC patients in Taiwan. Semi-quantitative reverse transcriptase (RT)-polymerase chain reaction (PCR), quantitative real-time PCR carried out to determine the mRNA level of GATA3 from 241 pairs of matched tumor and adjacent normal tissues from anonymous female donors. GATA3 immunohistochemistry (IHC) staining and H-score were performed (n=25). Inducing and silencing of GATA3 were done by exposure MCF-7 cell line to nicotine or curcumin, respectively. GATA3 expression was detected in most of the estrogen receptor-positive (ER+) tumor specimens (176/241, 73%) compared with paired normal tissues (65/241, 27%) (p= < 0.001). The GATA3 level was highest in Luminal A and independent t-tests revealed higher GATA3 were associated with ER+ (p = 0.018) and BC stages (stage II, and stage IV). Nuclear protein expression of GATA3 was detected in tumor tissues (p=<0.001) with higher H-score in Luminal A patients (p=0.012). Kaplan–Meier survival analyses showed that ER+/progesterone receptor (PgR) + and lower grade BC patients with relatively high GATA3 had better clinical overall survival (OS). GATA3 regulate ERa and BCL-2 as BC luminal subtype markers. Cox univariate and multivariate analyses demonstrated that the