Expression of Cancer Stem Cell Biomarkers in Male Breast Cancer

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ABSTRACT
Male breast cancer is an uncommon disease, representing <1% of all breast cancer diagnoses. The prognostic factors and expression of molecular markers in male breast carcinoma are similar to female cancer. Cancer stem cell (CSCs) have been associated with tumor aggressiveness and drug resistance. CSCs are characterized by CD44 and ALDH1 expression. We investigated their expression in male breast cancer.

INTRODUCTION
• Male breast cancer is a rare disease representing <1% of all breast cancer diagnoses. However, a mortality of 33% is considerably higher than for breast cancer in women. Male breast cancer is usually detected at an advanced stage compared with female breast cancers.
• Cancer stem cell (CSCs), which have the ability to self renew and give rise to differentiated progeny, have been implicated in the possible mechanisms of cancer resistance to chemotherapy and radiation.
• CSCs are characterized by CD44 and/or Aldehyde dehydrogenase-1 (ALDH1) expression.

METHODS
• Approval of the study protocol was obtained from the Jefferson Internal Review Board. All the male breast cancers were obtained from the file of the Department of Pathology of Thomas Jefferson University Hospital between 1982 and 2010. A total of 18 cases were reviewed to confirm the diagnosis and to characterize each tumor.

RESULTS
• Tumors with scores 1 and 2 were defined as low CD44 expression. Any tumor cell with cytoplasmic expression of ALDH1 was considered positive.

CONCLUSION
• CSCs may play a role in stromal invasion and metastasis. CD44 and ALDH1 expression may play a role in stromal invasion and metastasis. CD44 expression was high in IDC and low in DCIS. ALDH1 positive CSCs were present in IDC, but were absent in DCIS. Both CD44 and ALDH1 showed increased expression in the invasive components. CSCs may play a role in stromal invasion and metastasis.