

DETECTION OF PUTATIVE CANCER STEM-CELL MARKERS IN INVASIVE DUCTAL CARCINOMA OF THE BREAST BY IMMUNOHISTOCHEMISTRY

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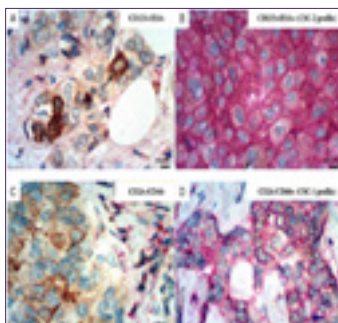
Abstract

Background: Experimental evidence from the last two decades supports the existence of a special type of neoplastic cell with stem-like features (so-called Cancer Stem Cell/CSC) and their role in the pathophysiology and therapeutic resistance of mammary cancer. Immunohistochemistry (IHC) is an eligible method to detect CSC in paraffinized tissue. Despite of being a low sensitive method, the detection of some of the putative CSC markers by IHC may be of prognostic/predictive relevance in human breast cancer.

Methodology: An immunohistochemistry panel of 10 putative CSC markers (CD34, C-KIT, CD10, SOX-2, OCT 3/4, p63, CD24, CD44, CD133 and ESA/EPCAM) was applied to 74 cases of breast cancer, previously diagnosed, treated and followed in a Regional Cancer Center of Minas Gerais State, Brazil, from 2004 to 2006. Possible associations between CSC markers and classic variables of clinical/pathological relevance were investigated.

Findings: 85.1% of the cases were positive for at least 1 antibody, with an average of 2 positive antibodies for case. The CSC profiles 1 (CD24-/CD44+) and 2 (CD133+/ESA+) were positive, respectively, in 52.7% and in 17.6% of the cases. The others putative CSC markers were positive in <15% of the cases. Positivity to CSC-1 profile was significantly associated to: tumors lower than 2.0 cm ($p=0.039$); early clinical stages ($p=0.032$); patient's > 40 years-old ($p=0.022$) and increased death risk of 4X ($p=0.03$; 95% CI, 1.09-14.41). Positivity to CSC-2 profile was related to an increased in tumor relapse risk of 3.75X (IC95%=1.02-13.69; $p=0.04$).

Conclusions: Two CSC immunohistochemical profiles (CD24-/CD44+ and CD133+/ESA+) were respectively attested by the negative impact on overall survival and free of disease survival. The absence of associations with known prognostic factors strengthens these CSC profiles as independent prognostic factors in breast cancer in this study. The CSC may become an important therapeutic target in the future cardiac function. These results indicate, in this/these models of obesity, UA is not causative of metabolic dysfunction whereas elevated XOR activity does alter cardiovascular function.



Biography

Dr. Rodrigo Vismari de Oliveira is a pathologist physician, experimented in General Surgical Pathology. As the immunohistochemistry is a valuable tool to classify the tumors, to determine its prognosis and to determine possible predictive therapeutic response targets, he focused his research on an easily applicable technique, with routinely use in the laboratory of Anatomic Pathology. The choice to perform immunohistochemistry on tumor microarrays was based on the tendency of small size surgical specimens obtained from routine biopsies.

Publication

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