Analyses of β-Galactoside α-2,3-Sialyltransferase 1, β-Galactosamide α-2,6-Sialyltranferase 1 and α1,3/4-Fucosyltransferase Expression in Different Molecular Subtypes of Breast Cancer

Carvalho, A.F.F[1], Nascimento, J.C.F[1]., Ferreira, S.A.[1], Vasconcelos, J.L.A.[1], Silva-Filho, J.L.Q.[1], Beltrão, E.I.C.[1,2], Rocha, C.R.C.[1,2]

[1] Laboratório de Imunopatologia Keizo Asami, Universidade Federal de Pernambuco, Pernambuco, Brazil; [2] Departamento de Bioquímica, Centro de Ciências Biológicas, Universidade Federal de Pernambuco, Pernambuco, Brazil.

INTRODUCTION: Breast invasive ductal carcinoma (IDC) is one of the main causes of death related to cancer in women around the world. Modification of Glycosylation patterns is a frequent feature in tumor phenotype. Sialylation and fucosylation are among the most usual changes founded in tumor Glycosilation. The increased sialylation, mainly in α-2,3 and α2,6 positions, has been associated with cancer and related to higher tumor metastatic potential. The β-galactoside alpha-2,3-sialyltransferase 1 (ST3GAL) and β-galactosamide alpha-2,6-sialyltranferase 1 (ST6GAL1) are responsible for transfer sialic acids to galactose residues at α2,3 and α2,6 positions, respectively. Additionally, fucosylated glycans synthesized by α1,3/4-fucosyltransferase (FUT3) play an important role in breast cancer prognosis and metastasis, being involved in the binding of circulating tumor cells to the endothelium and being associated to tumor stage, metastatic potential and chemoresistance. Since ST3GAL1, ST6GAL1 and FUT3 enzymes and/or its products are related to tumor phenotype, the hypothesis of this work is that the levels of these enzymes could be altered in different molecular subtypes of IDC. **OBJECTIVES**: Analyze the expression of ST3GAL1, ST6GAL1 and FUT3 in IDC breast tissues and investigate the relationship between their expression and the molecular subtypes of breast cancer. **MATERIALS AND METHODS**: Immunohistochemistry assay was used to access the Glycosiltransferases' expression in 38 CDI breast tumor tissue samples. The estrogen receptor, progesterone receptor, HER2 and Ki-67 classic molecular markers were also assessed by immunohistochemistry assay. Statistical analysis was performed using Fisher's Exact test on GraphPad Prism version 5 software. **RESULTS AND DISCUSSION**: Negative FUT3 staining was more frequent in triple-negative IDC tumors than non-triple negative ones. The expression of ST3GAL1 and ST6GAL1 were similar between the IDC molecular subtypes. **CONCLUSION**: Our results indicate a possibly association between the absence of FUT3 and the triple-negative IDC molecular subtype.

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