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935 – Expression of microRNAs 10b and 125b as markers of aggressiveness and lymph node dissemination in breast cancer

Brenda Carrera Merlini, Nathalia Cruz Costa, Julia Lipert Pazzin, Andrea Pires Souto Damin

¹Hospital de Clínicas de Porto Alegre – Porto Alegre (RS), Brazil.

²Universidade Federal do Rio Grande do Sul – Porto Alegre (RS), Brazil.

Introduction: Breast cancer progression is a complex process mediated by molecular alterations that precede clinical manifestations. MicroRNAs act as critical post-transcriptional regulators and may play oncogenic or tumor-suppressive roles. The identification of biomarkers that correlate molecular signatures with clinical staging is essential to improve prognostic stratification and therapeutic personalization.

Objective: To analyze the association between the expression levels of microRNAs 10b and 125b and clinical tumor size (T) and the presence of axillary lymph node metastasis in patients with breast cancer.

Methods: This cross-sectional quantitative study included a sample of 176 patients. Gene expression analysis was performed, and expression levels were categorized as “high” or “low.” Clinical data were obtained from medical records. Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), applying Pearson’s chi-square test and Fisher’s exact test to assess associations. A significance level of $p < 0.05$ was adopted.

Results: A highly significant association was observed between both markers and parameters of aggressiveness. miR-10b demonstrated oncogenic behavior, with high expression levels significantly associated with T2 tumors (60.0%) and, more strongly, with the presence of lymph node metastasis (88.4%). In contrast, miR-125b exhibited a tumor suppressor profile; its low expression was associated with T2 tumors (59.8%) and positive nodal status (79.0%).

Conclusion: miR-10b and miR-125b proved to be reliable biomarkers of tumor progression in this sample. The upregulation of miR-10b and downregulation of miR-125b constitute a molecular signature strongly associated with lymphatic dissemination, reinforcing their potential clinical application in identifying more aggressive biological phenotypes.

Ethics: Research Ethics Committee Approval (CAAE 68257123.0.0000.5327).

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Keywords: breast cancer; microRNAs; miR-10b; miR-125b; lymph node metastasis.