Aberrant plasma levels of circulating miR-21 and miR-494 are associated with a poor prognosis in patients with breast cancer.

Domingos, I.C[1,2].; Montozo, J.L[1,2].; Macedo, T[1]; Evangelista, A.F.[1]; Vieira, R.A.C.[3]; Marques, M.M.[1,2]

[1] Molecular Oncology Research Center, Barretos Cancer Hospital, Barretos, SP, Brazil
[2] Barretos School of Health Sciences, FACISB, Barretos, SP, Brazil
[3] Department of Mastology and Breast Reconstruction, Barretos Cancer Hospital, Barretos, SP, Brazil

E-mail: mmcmsilveira@gmail.com

Abstract

Human breast cancer is the most common cancer among women in the world. Metastasis is the cause of approximately 90% of deaths in patients with malignancies, so that the invasion and metastasis play an important role in the spread of cancer. The identification of novel biomarkers for prognosis breast cancer would be a great advance. Recently, evidence indicates that deregulation of regulatory small noncoding RNAs (miRNAs) has been associated with invasion, migration and tumor metastasis. Because of their role in tumorigenesis and stability in body fluids, microRNAs (miRNAs) are emerging as a promising diagnostic tool. Our aim was to identify miRNAs deregulated in breast tumors and evaluates the potential of circulating miRNAs in breast cancer detection. A total of 30 patients were grouped as 50% metastatic and 50% non metastatic breast cancer from different clinical staging. Plasma samples were collected for all patients. Further, miR-21 and miR-494 expression levels were measured by real-time PCR and biomarkers were analysed alone and in combination, including the estimation of sensitivity and specificity in ROC curves. It was observed up-regulation of both microRNAs in compared to non-metastatic (control group) group in plasma. The expression combined of miR-21 and miR494 in plasma of metastatic group compared to the control group has showed improved results. In plasma, biomarkers combination in metastatic group compared with non-metastatic group one has showed good sensitivity and specificity in plasma with AUC of 0.75. These findings support the evidence that combination of both tumour oncomirs can be used as candidates of non-invasive biomarkers for detection of breast cancer progression. The identification of deregulated miRNAs in plasma of patients with breast cancer supports the use of circulating miRNAs as a method for biomarkers of prognosis to breast cancer.

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