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TRIPLE-NEGATIVE BREAST CANCER PATIENTS HAVE MORE ABUNDANT MIRNAS PROFILES DERIVED FROM THE PERIPHERAL BLOOD CIRCULATING MICROVESICLES AS A TOOL OF LIQUID BIOPSY

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Objective: The identification and characterization of miRNAs derived from microvesicles of breast cancer patients is the main goal of this study. **Methods:** A cohort of 28 patients was evaluated, 28.6% are HER2 overexpressed, 46.4% are triple-negative, and 25% are triple-positive. The study protocol was approved by the Ethics Committee of Instituto Mário Penna (CAEE 82703418.8.0000.5121). For this purpose, the peripheral blood was collected in EDTA tubes and obtained the red blood cell-free plasm. The microvesicles were purified from plasm using the microRNeasy kit (Qiagen) with posterior small RNA precipitation, according to manufacturer's instructions. The small RNA obtained was used for high throughput sequencing using the QIAseq miRNA Library kit (Qiagen) for library construction, according to manufacturer's instructions. The sequencing was performed by the Illumina NextSeq 550. The sequences obtained were filtered by quality, the adapters were removed, and small RNA patterns were evaluated using the Unitas (version 1.7.8). **Results:** The three groups of patients showed a significant abundance of miRNA profiles. The triple-negative breast cancer (TNBC) patients showed the highest relative abundance, which can be due to the more intense exocrine activity of this type of tumor. Furthermore, our results highlighted a great abundance of miR-223-3p in the TNBC patient group. **Conclusion:** Normally, TNBC patients have an aggressive condition of disease, and cell proliferation, migration, and invasion are common events. These characteristics can be regulated by miRNAs exported from tumor cells in microvesicles. Several miRNAs are already related to these events, and this makes them potential therapeutic or diagnostic targets for this disease. miR-223-3p was previously related to epithelial-mesenchymal transition, cell proliferation, and migration. This phenotypic effect is a strong indication that this miRNA could be used as a biomarker in TNBC management and opens great possibilities for further validation of this as a tool for liquid biopsy tests.

Keywords: miRNAs. Breast cancer. Microvesicles.