

POSTER 88

PLASMA miRNAS AS NOVEL BIOMARKERS FOR BREAST CANCER DETECTION

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Objective: MicroRNAs, a family of 19- to 25-nucleotide noncoding RNAs that primarily regulate genes at post-transcriptional level, are frequently dysregulated in cancer including breast cancer. Recent studies demonstrate that the microRNAs in blood are present in a notably stable form. The objective of this study was to investigate the potential of circulating microRNAs as novel non-invasive biomarkers for breast cancer detection.

Methods: First, we searched the miRNA microarray data of breast cancer from published literature, and selected 15 of miRNAs (miR-17, 21, 24, 106a, 125b, 128, 155, 182, 183, 197, 199b, 203, 205, 210 and 221) that were most frequently up-regulated in breast cancer tissues. Total RNA including miRNAs were isolated with Trizol LS reagent, then polyadenylated and reverse-transcribed with a poly(T) adapter into cDNAs for real-time PCR using the miRNA-specific forward primer and the sequence complementary to the poly(T) adapter as the reverse primer. The levels of miRNAs were determined in 83 plasma samples from breast cancer patients and 36 from non-cancer controls.

Results: We found that the levels of miR-21 and miR-25 in plasma of breast cancer patients were significantly elevated compared with controls. MiR-21 yielded an AUC (the areas under the ROC curve) of 0.6799 (95% CI: 0.5872 to 0.7726, $P < 0.001$), miR-25 yielded an AUC of 0.7268 (95% CI: 0.6374 to 0.8263, $P < 0.001$) in discriminating breast cancer from controls.

Conclusions: MiR-21 and miR-25 are significantly elevated in patient plasma with breast cancer and can be the potential non-invasive molecular biomarker for breast cancer detection and clinical follow-up.