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MicroRNA expression profiling to identify potential biomarkers in inflammatory breast cancer

Inflammatory breast cancer is characterized by clinical hallmarks of diffuse erythema and edema (peau d'orange) involving one third or more of the breast skin caused by tumor emboli blocking dermal lymphatics, and rapid progression from the onset of the disease. It is the most aggressive form of breast cancer, comprising 1-5% of newly diagnosed breast cancer in the United States. The survival outcomes of patients with inflammatory breast cancer are poor with standard therapy. There is an urgent need for new therapeutic targets. At the molecular level, the few published mRNA expression profiling studies have indicated that transcriptional heterogeneity exists in inflammatory breast cancer as extensively as in non-inflammatory breast cancer. Recent advances have implicated the role of microRNA as oncogenes or tumor suppressor genes in tumorigenesis, metastasis and response to treatment in various cancer types including breast cancer. In our recent study, the microRNA expression profiles of 23 inflammatory breast cancer, 24 non-inflammatory advanced breast cancer and 12 normal breast tissue fresh frozen samples were generated using a previously validated microRNA microarray assay. Among the differentially expressed microRNAs, microRNA-205 expression was decreased not only in tumor compared with normal breast tissue, but also in inflammatory breast cancer compared with non-inflammatory breast cancer. Lower expression of microRNA-205 correlated with worse distant metastasis-free survival and overall survival in our cohort. Thus, microRNA-205 may serve as a therapeutic target in advanced breast cancer including inflammatory breast cancer.

Biography

Lei Huo received her Bachelor of Medicine degree at Beijing Medical University and her PhD in Molecular Biology and Genetics at Northwestern University, Chicago. A practicing breast pathologist in MD Anderson Cancer Center, she is actively involved in clinical and translational research in the field of breast cancer. Her research interests include molecular and immune-histochemical markers in the diagnosis and treatment of breast cancer, among others.

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