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Improving Breast Cancer diagnosis by circulating microRNAs

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Breast cancer (BC) is the second most common tumors in women, and its late diagnosis make it responsible for the majority of cancer deaths in females. Mammography is a x-ray picture of breast, used to check for BC, its rotinary used has improve early detection and identification of this neoplasia. Breast lesion images are classifies according to tissue density in 7 different categories known as BI-RADS 0-6. However this system is not accurate to classify lesion in category 3 and 4, where a suspicious of BC is determine but further examens are needed to confirm the diagnosis. Recently has been described that human serum/plasma contains a large number of circulating microRNAs (miRNAs). Alteration on circulating miRNA expression pattern has been related to several pathological conditions, including cancer. Here we analyzed circulating miRNAs as molecular markers to differentiated benign from malignant breast lesion according to BI-RADS categories. In order to do so we studied the expression patter of 72 plasma samples of patients with BI-RADS 1 or 2 (non cancer patients) and 46 plasma samples of patients with BI-RADS 5 or 6 (cancer patients), and for the validation we have included 29 patients samples of each group. We then compared the miRNAs' expression profile to find alteration capable of distinguish patients with cancer from those without. We analyzed over 1800 mature miRNA using the miRNome PCR array v18.0 (Qiagen®), and then we tested the 13 miRNAs found alteded in all analisys by qRT-PCR. In the first analysis set (30 control + 13 cancer sample) we found three miRNA up regulated in the cancer groups with a $p<0.05$, while in the second set (44 controls + 33 cancer samples) we found 7 miRNAs with a difference of at least 1.5x and a p value of <0.05. When we combined the two groups we were able to identify 2 miRNAs that are up regulated in more than 1.5x and with a $p<0.05$ in the cancer group respect the control group, and also another 2 miRNAs with a difference over 1.5X among groups. On the validation group we were able to confirm the diferential expression of both miRNA found in the consolidated group, and also of another 2 miRNAs. We now intent to test these differences in the plasma of BI-RADS 4 patients, to verify the efficacy of these circulating miRNAs in identifying patients who certainly have malignant lesion from those BI-RADS 4 with benign lesions.

Biography

Julia Alejandra Pezuk has completed her PhD at the age of 30 years from Sao Paulo University and is currently doing her postdoctoral studies at Educational and Research Sirio-Libanes Institute in Sao Pablo, Brazil. She has published more than 20 papers in reputed journals and has been serving as a scientific reviewr. Julia has participated in different scientific events and discussion, have lectured speaches and courses and has also been part of organisers comitee in scientific events. Julia has monitor scientific lab activity during inernships and has co-supervised a undergraduate. She collaborate in many scientifics projects on the cancer field.

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