Reviewer's report

Title: MicroRNA expression as risk biomarker of breast cancer metastasis: a pilot retrospective case-cohort study.

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Reviewer: ATHINA MARKOU

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BMC Cancer

Manuscript title: microRNA expression as a risk biomarker of breast cancer metastasis: a pilot retrospective case-cohort study

Authors: Augusto Marino, Adriane Evangelista et al

General Comments:

The manuscript by Marino et al reports on the molecular biomarkers identification for breast cancer metastasis by using a homogeneous population of FFPEs tissues (n=64) from breast cancer patients. The authors performed microRNA profiling by using these FFPEs tissues and seven miRNAs were found to be differentially expressed between non-metastatic and metastatic patients. Marino et al studied further three of these miRNA and they suggested that up-regulation of miR-183, miR-494 and miR-21 were associated with poor prognosis.

Although miRNAs as biomarkers in breast cancer metastasis are a very interesting issue this study was not-well designed and had some issues.

Major Compulsory Revisions:

1. The main limitation of this study is the small number of clinical samples. It is too risky to evaluate miRNA as biomarker and to perform statistical analysis in this limited group of patients. Many other studies in the literature have already studied miRNAs as biomarkers in a larger group of breast cancer patients.

2. Secondly, although the authors found 7 miRNAs that were differentially expressed between metastasis and non-metastasis patients stratified according to clinical stage, 2 of them were finally selected for further evaluation by RT-qPCR.

You should state the reason why these miRNAs were selected, additionally why you didn't study all these miRNAs and why you preferred to study miR-183 which not included in this group of seven.

3. It is necessary the authors inform us about the concordance of microarray data and RT-qPCR analysis.

4. The three selected miRNAs shared PTEN as target, the reviewer wonder if
you have studied the expression of this protein in this group of patients.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests