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Potential Biomarker for Breast Cancer Screening: A Systematic Review and Meta-Analysis

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Abstract. It is aimed of evaluating the clinical significance of miR-155 on diagnosing human breast cancer**. Method:** Eligible studies were identified through multiple search strategies. The search was updated up until April 10, 2017. Fagan's nomogram, Publication bias, meta-regression, sensitive analysis, area under the summary receiver operating characteristic (AUC), diagnostic odds ratio (DOR) as well as pooled sensitivity and specificity were utilized to assess the capacity of miR-155 for diagnosis. The meta-analysis was conducted and the origin of heterogenic property was investigated by Stata SE 12.0 and Meta-Disc software. **Results:** The meta-analysis contained nine articles totally with the AUC, DOR, specificity, pooled sensitivity of 36.45 (95 % CI 9.77–136.04), 0.92 (95 % CI 0.89–0.94), 0.82 (95 % CI 0.77–0.91), and 0.89 (95 % CI 0.77–0.95) separately. The negative and positive likelihood ratios were 0.14 and 5. Moreover, the heterogeneity was obviously apparent but resulted from neither sensitivity analyses nor threshold effect. **Conclusion:** The evidence from this study indicates that miR-155 exhibits satisfactory performance on diagnosis for breast cancer (BC).

Keywords: Diagnosis, microRNA-155, Biomarker, Breast cancer

1. Introduction

Breast Cancer (BC) is the leading cause of cancerous death among females with the highest diagnostic frequency. About 63,410 cases of female breast carcinoma in situ are expected to be diagnosed in 2017 in America, and it alone is anticipated to account for 30% of all new cancer diagnoses in women [1]. There are many diagnostic tools for detection of breast cancer, such as imaging examination and bi-