Diagnostic properties of miR-146a-5p from liquid biopsies in prostate cancer: A meta-analysis

Abstract

Background: Several studies on biomarker properties of microRNAs from liquid biopsy in prostate cancer (PCa) identified miR-146a-5p as a potential novel diagnostic marker. However, other studies with the same or similar topic failed to confirm the supposed discriminatory ability of miR-146a-5p, for which reason we aimed at elucidating the potential biomarker role of circulatory/urinary miR-146a-5p in PCa by conducting a qualitative and quantitative data synthesis.

Methods: Eligible articles were identified by searching PubMed, Scopus and Web of Science databases. Open MetaAnalyst software was used for pooling data on sensitivity, specificity, likelihood ratio and diagnostic odds ratio (OR) of miR-146a-5p.

Results: A total of 15 articles were eligible for qualitative data synthesis, while the results from 13 studies with 2080 participants were included in the meta-analysis. The established between-study heterogeneity was high, while the expression of hsa-miR-146a was associated with a diagnostic OR of 3.544 ($P < 0.001$; 95 %CI 2.186-5.747). Pooled sensitivity was found to be lower than 70 % (0.655, 95 %CI 0.573-0.729, $P < 0.001$), while the obtained value for specificity was 65 % (95 %CI 0.583-0.709, $P < 0.001$). Segregating studies according to ethnicity, sample type or the type of controls did not result in significantly higher sensitivity and specificity in subgroups, compared to the overall pooled data.

Conclusions: The resulting pooled sensitivity, specificity and diagnostic OR do not qualify miR-146a-5p for a reliable diagnostic biomarker of PCa.