



# Identification of microRNAs as diagnostic biomarkers in screening of head and neck cancer: a meta-analysis

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**ABSTRACT.** Head and neck cancer (HNC) is one of the most prevalent cancers; it is often diagnosed at its advanced stage and has a low 5-year survival rate. Evidence suggests that noninvasive biomarker microRNAs (miRNAs) are valuable for early diagnosis of HNC. This meta-analysis assessed the diagnostic value of miRNAs in HNC detection. A systematic literature search for relevant studies up to August 4, 2014 was conducted in databases and other sources. Statistical analysis was conducted using STATA 12.0. Pooled sensitivity, specificity, and other parameters, together with a summary receiver operating characteristic curve were used to assess the overall performance of miRNA assays. Subgroup analyses and meta-regression were used to analyze heterogeneity, and a Deeks' funnel plot asymmetry test assessed publication bias. Twenty-four articles with 1856 HNC patients and 1375 controls were included. The pooled results were as follows: sensitivity, 0.80 (95%CI = 0.77-0.83); specificity, 0.80 (95%CI = 0.76-0.85); positive likelihood ratio, 4.1 (95%CI = 3.2-5.2); negative likelihood ratio, 0.25 (95%CI

= 0.21-0.30); diagnostic odds ratio (DOR), 16 (95%CI = 11-24); and area under curve (AUC), 0.87 (95%CI = 0.84-0.89). We conducted subgroup analyses based on ethnicity, cancer type, miRNA profiling, and specimen types, and found that miRNA assays yielded the highest accuracy in esophageal cancer. Notably, the DOR was 99 and the AUC was 0.96 for the multiple miRNA test, indicating strong discrimination of cancer patients from healthy people. The meta-analysis indicates that noninvasive miRNAs are a promising diagnostic tool with moderate accuracy for HNC diagnosis.

**Key words:** MicroRNAs; Head and neck cancer; Screening; Meta-analysis