

COMPARISON BETWEEN DIAGNOSTIC PERFORMANCE OF RANDOM URINE SAMPLES USING ALBUMIN CONCENTRATION AND ALBUMIN TO CREATININE RATIO FOR DETECTING MICROALBUMINURIA IN DIABETIC PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction and Aims

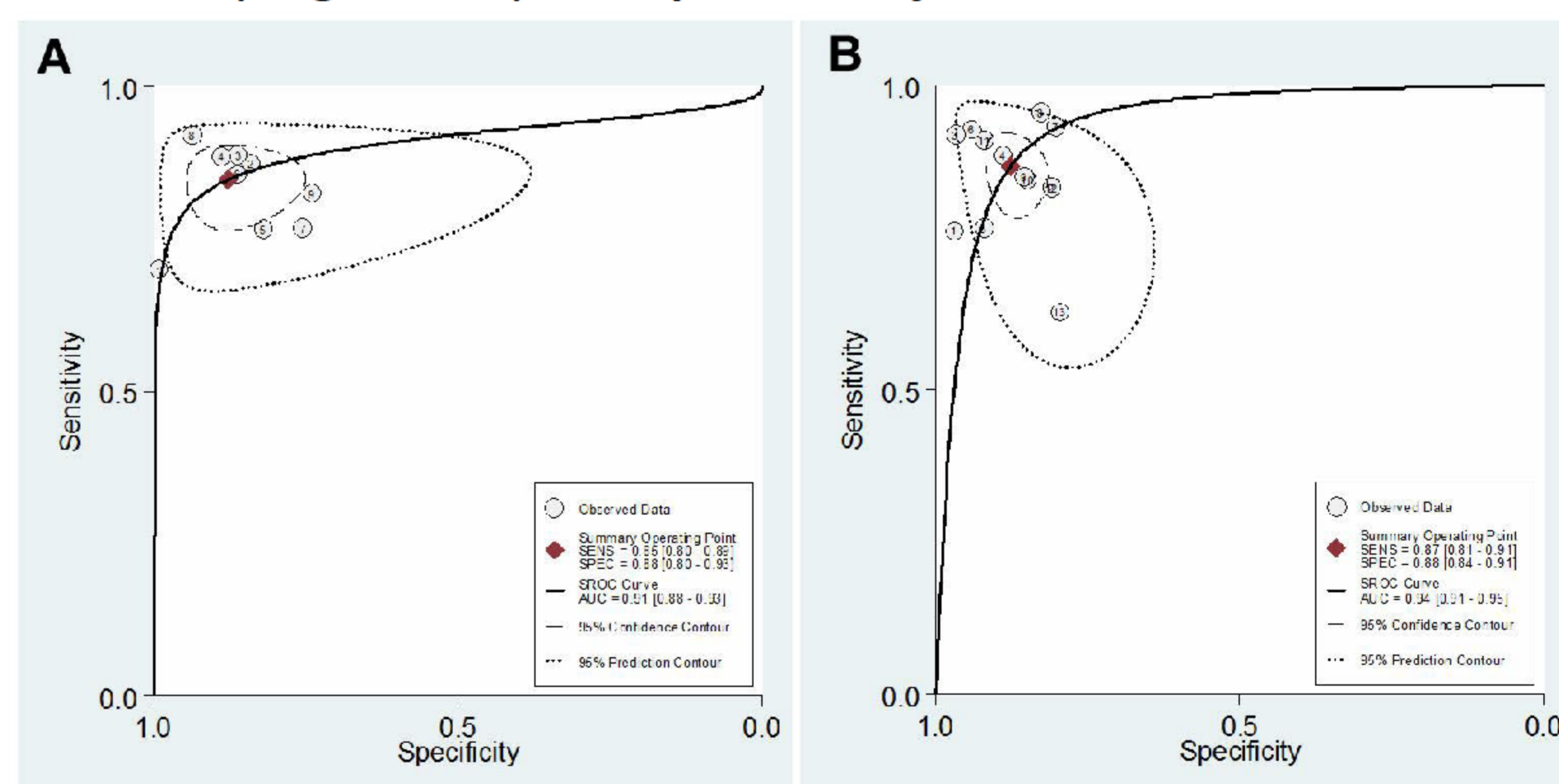
Measurement of a random urine sample for albumin concentration (UAC) without simultaneously measuring urine creatinine is less expensive than measuring albumin to creatinine ratio (ACR), but comparisons of diagnostic performances for detecting microalbuminuria among diabetic patients haven't been undertaken in previous meta-analysis. In this study, we thus aim to compare the diagnostic performance of the different index tests of UAC and ACR for random urine samples, for detecting microalbuminuria in diabetic patients.

Material and Methods

We systematically searched PubMed, MEDLINE, and Scopus for English publications from the earliest available date of indexing through 31 Jul 2012, for clinical studies assessing either UAC or ACR of random urine sample as a diagnostic test to evaluate diabetic patients for the presence of microalbuminuria, and using an urine albumin excretion rate of 30-300 mg/day by 24-hour timed urine collection as the reference standard for microalbuminuria. We used bivariate random-effects models for the analysis and pooling of diagnostic performance measures across studies, as well as the comparisons between different diagnostic tests.

Results

We identified 14 studies with 2078 participants in total; nine studies evaluated UAC and 12 studies reported on ACR. The meta-analysis showed a pooled sensitivity of 0.85 (95% confidence interval, 0.80 to 0.89) and 0.87 (0.81 to 0.91) for UAC and ACR, respectively, and a pooled specificity of 0.88 (0.80 to 0.93) and 0.88 (0.84 to 0.91), respectively. This resulted in a pooled diagnostic odds ratio (DOR) of 39.7 (20.9 to 75.3) and 46.4 (26.0 to 82.7) for UAC and ACR, respectively. No difference in sensitivity ($P = 0.70$), specificity ($P = 0.63$), or DOR ($P = 0.59$) between UAC and ACR was found. The hierarchical summary receiver operating characteristic curves indicates that the area under the curve was 0.91 (0.88 to 0.93) and 0.94 (0.91 to 0.95) for UAC (Figure A) and ACR (Figure B), respectively.



Conclusion

UAC and ACR both yielded high sensitivity and specificity for detection of microalbuminuria. In other words, as the diagnostic performance of UAC is comparable to that of ACR, our findings indicate that UAC may have the potential to be the screening tool of choice for the diabetic population, especially when health care resources are limited.

