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ORIGINAL ARTICLE

A Novel Approach of Urinary Monohydroxyphenyl Metabolites Assay in Cancer Screening

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SUMMARY

Background: **A noninvasive, fast, highly sensitive and simple test is needed for cancer screening in addition to the detection of biomarkers in blood. Recently, the patent (CN102565055A) for the Urinary Monohydroxyphenyl Metabolites Assay (UMM-A) was authorized, and the effectiveness of clinical application has yet to be studied further.**
Methods: **A retrospective study was conducted consisting of 432 cancer patients, 28 benign tumor patients, 117 non-cancerous diseases patients, and 120 healthy donors to analyze the levels of monohydroxyphenyl metabolites in the urine sample. A logistic regression model was used to study the possible confounding factors affecting the diagnostic performance and to test the probability of a case to be positive for UMM-A.**
Results: **Compared with healthy donors, non-cancerous disease, and benign tumor subjects, the positive rate and MM level of UMM-A in cancer patients have significantly increased. After the 246 re-treated cancer patients were excluded, and 186 untreated cancer patients were included, with the same specificity to 77.0%, the sensitivity improved from 66.7 to 89.8%, the negative predictive value improved from 58.6 to 91.4%.**
Conclusions: **The present study has provided important information on the diagnostic characteristics of UMM-A for untreated cancer and its potential application in cancer screening.**
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Supplementary Tables and Figures

Table S1. Diagnostic performance of UMM-A in cancer patients.

Candidate method	Cancer	Control group	Total
Positive	288 (TP)	61 (FP)	349
Negative	144 (FN)	204 (TN)	348
Total	432	265	697

True positive (TP), false negative (FN), false positive (FP), and true negative (TN). Sensitivity = TP/(TP + FN); specificity = TN/(FP + TN); positive predictive value = TP/(TP + FP); negative predictive value = TN/ (FN + TN).

Table S2. Re-analysis relevant parameters for cancer screening.

Candidate methods	UCP	Control group	Total
Positive	167 (TP)	61 (FP)	228
Negative	19 (FN)	204 (TN)	223
Total	186	265	451

True positive (TP), false negative (FN), false positive (FP), and true negative (TN). Sensitivity = TP/(TP + FN); specificity = TN/(FP + TN); positive predictive value = TP/(TP + FP); negative predictive value = TN/(FN + TN).

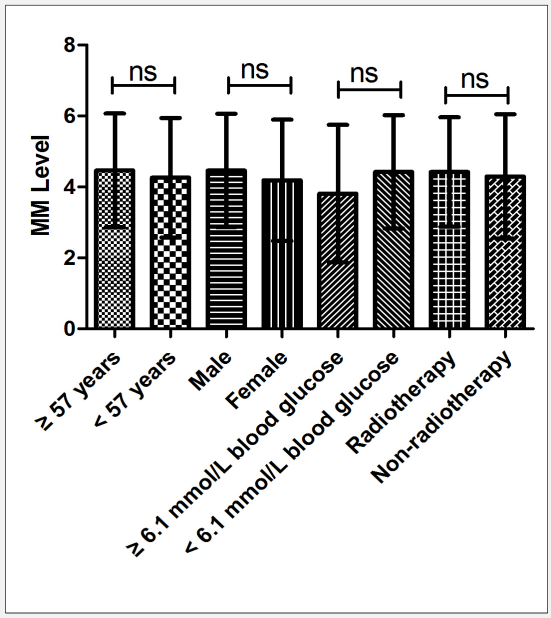

Figure S1. The semi-quantitative MM levels of UMM-A stratified for age, gender, blood glucose, and radiotherapy.

Means and standard deviations were represented in the figure, and repeated measures of Wilcoxon's rank-sum test were used to analyze the data. ns, $p > 0.05$.