

Urine test could help clinicians spot blood clots in at-risk patients

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A new study by researchers from California and Canada indicates a simple urine test can indicate the presence of venous thromboembolism, a blood clot that has broken free from its point of origin and which travels through the bloodstream, eventually lodging in a vein. The test evaluates the levels of fibrinopeptide B (FPB), a small peptide that's released when a thrombosis forms and which is removed from the body through urine.

The results of the study will be presented at the American Thoracic Society's 2014 International Conference here.

Study lead author Timothy Fernandes, M.D., M.P.H., said the study was developed based on the results of a pilot trial that suggested that [urine](#) FPB levels could be used as a screening tool for venous thromboembolism in patients at risks for clots.

"The urine FPB test offers advantages over other screening methods because it doesn't require [blood](#) to be drawn and it can provide more accurate results than the D-dimer test," Fernandes said.

The D-dimer test looks for blood evidence of a protein fragment called D-dimer that is present in the blood after a clot begins to break down. The FPB test has the potential for greater specificity because it can reflect ongoing clot activity, while D-dimer can only be measured once a clot has already become degraded.

"During our study, we validated the sensitivity, specificity and likelihood ratios for several diagnostic thresholds of urine FPB using stored urine samples from the Fernandes said.

The researchers used stored urine samples taken from 344 patients who participated in the Pulmonary Embolism Diagnosis Study (PEDS), a multicenter study of 1,417 patients considered likely to have an acute pulmonary embolism. For all [urine samples](#), the researchers measured the FPB concentration and evaluated the sensitivity and specificity of the test at various cut-off points in relation to its ability to predict the presence of venous thromboembolism.

What they found was at concentrations of 2.5 ng/ml, urine FPB demonstrated sensitivity comparable to previously published values for plasma latex and whole blood D-dimer levels, but with greater specificity.

"The results of our study indicate that urine FPB tests may be a useful complement to current biomarkers such as D-dimer to measure for the presence and activity of venous thromboembolism," Dr. Fernandes said. "As an addition to other types of testing, FPB urine provides greater specificity and doesn't require a blood draw, which can be a major boon to patients."

The patent for the urine fibrinopeptide B test is held by the University of California Board of Regents. Dr. Fernandes and his co-authors plan on developing a urine dipstick [test](#) for FBP that could be quickly and widely applied.

Future studies are planned to assess urine fibrinopeptide B in other settings where D-dimer is used including use of urine fibrinopeptide after anticoagulation to determine the risk of recurrent [venous thromboembolism](#).

More information: Urine Fibrinopeptide B As A Screening Test For Acute Pulmonary Embolism , Scientific Abstract , 18.08 - Pulmonary Embolism: Acute and Chronic (PC), T.M. Fernandes¹, D. De Santis¹, P.G. Chiles¹, J.J. Marsh¹, P.S. Wells², T.A. Morris¹; ¹University of California, San Diego - La Jolla, CA/US, ²The Ottawa Hospital and the University of Ottawa - Ottawa, ON/CA

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