Systematic review

Point-of-care D-dimer tests can contribute to patient management in outpatients with suspected venous thromboembolism, particularly those at low risk

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Commentary on: **Geersing GJ,** Janssen KJ, Oudega R, *et al*. Excluding venous thromboembolism using point of care D-dimer tests in outpatients: a diagnostic meta-analysis. *BMJ* 2009;**339**:b2990.

Several studies have assessed the accuracy of D-dimer testing in the diagnostic process for venous thromboembolism (VTE). A meta-analysis of the conventional D-dimer tests showed high sensitivities for enzyme-linked fluorescent assay, microplate ELISA and latex quantitative assays, at the cost of lower specificity.[1] These tests can therefore reliably exclude a VTE, but at the expense of more testing. In addition, a low pretest probability combined with a negative D-dimer test can safely exclude a VTE.[2] Recently, newer point-of-care (POC) D-dimer tests have become available. Among the advantages of these tests are their rapid results, and they are therefore especially suitable for use in primary care and emergency departments. Geersing and colleagues performed a meta-analysis of studies evaluating four POC D-dimer tests. The meta-analysis showed that both quantitative and qualitative POC D-dimer testing could safely exclude VTE. Several points deserve comment.

The quantitative Cardiac D-dimer test, which had the highest sensitivity of the POC D-dimer tests, has never been evaluated in patients with suspected pulmonary embolism. Moreover, only one large study in consecutive patients with suspected deep vein thrombosis (DVT) has reported results for the performance of the Cardiac D-dimer test; other studies have been performed in small study populations. Consequently, the results regarding the accuracy of the Cardiac D-dimer test have to be interpreted with some caution, and the accuracy of this test in patients with suspected pulmonary embolism has still to be evaluated.

The study by Toll *et al*., which involved the Cardiac D-dimer test and Triage D-dimer test, has not yet been published. Because this is the only study reported in the meta-analysis that assessed the performance of the Triage D-dimer test in patients with a clinically suspected DVT, the results of this test cannot be properly interpreted, and we must await the official publication of the manuscript.

This meta-analysis did not describe the performance of the POC tests for patients with a suspected pulmonary embolism. Pooled sensitivity and specificity numbers are of relevance for the general performance of the POC tests; however, the sensitivity and specificity of D-dimer tests could differ between a suspected DVT and a suspected pulmonary embolism.[1] A pooled estimate of sensitivity and specificity has been given for patients with clinically suspected DVT in a covariate analysis. The same could be performed for the SimpliRED and Clearview Simplify D-dimer tests for patients with a clinically suspected pulmonary embolism. Such pooled estimates would be of higher clinical value than the pooled estimate of sensitivity and specificity for DVT and pulmonary embolism combined.

The meta-analysis does not comment on the low interobserver agreement regarding the qualitative POC tests in the various studies. This issue is especially relevant in the case of an intermediate test result. In daily practice less experienced primary and secondary care physicians should be able to interpret and implement the qualitative D-dimer tests appropriately. For these reasons, qualitative POC tests are not suitable for use in daily practice, especially not in the hands of less experienced clinicians.

Before they can be used in daily practice, the POC tests have to be evaluated in a broader patient population, including older patients, pregnant women and patients with a suspected recurrent VTE.

In conclusion, this meta-analysis shows that POC D-dimer tests have potential as part of the diagnostic process for VTE in primary care and emergency departments. However, more studies involving patients with clinically suspected pulmonary embolism are required to validate the newer POC D-dimer tests in all patients with suspected VTE before they can be safely implemented in daily practice. Finally, we discourage the use of qualitative POC tests, especially by less experienced physicians.

Competing interests: None.

References

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