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## NONINVASIVE DIAGNOSIS OF VENOUS THROMBOEMBOLISM IN OUTPATIENTS

Perrie A, Desmarais S, Miron P, de Moerloose P, Lepage R, Slosman D, Didier D, Unger PF, Patenaude JV, Bounameaux H, *Lancet* 1999;353:190-95

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### COMMENTARY BY:

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In this prospective study, a simple diagnostic algorithm for acute venous thromboembolism was developed based on clinical probability. Assessment of deep venous thrombosis (DVT) or pulmonary embolism (PE), plasma D-dimer measurement, lower limb venous compression, ultrasonography, and lung scan to reduce the need for phlebography and pulmonary angiography was done. Consecutive patients (918) from the Geneva University Hospital and the Hopital Saint Luc in Montreal, Canada were included in the investigation. Patients in whom venous thromboembolism was deemed absent were not given anticoagulants but were followed for three months.

In all patients, clinical probability of DVT or PE was calculated as low, intermediate, or high. In the second step, normal D-dimer concentration by rapid ELISA test ruled out venous thromboembolism in 286 (31%) patients. Diagnosis of DVT was established by ultrasonography in 175 (17%) patients. Lung scan was diagnostic in 80 (9%) of the remaining patients. Venous thromboembolism was also deemed absent in patients with low to intermediate clinical probability of DVT and a normal ultrasonography (236) and in patients with a low clinical probability of PE and a nondiagnostic lung scan (107). Pulmonary angiography and phlebography were done in only 50 (5%) and 2 (< 1%) of patients.

With this algorithm, a noninvasive diagnosis was possible in 866 (95%) patients. Three months later, the thromboembolic risk in patients not given anticoagulants was 1.8%, based on the results of the diagnostic protocol.

### COMMENTARY

The authors conclude that patients with suspected

thromboembolism can be diagnosed sufficiently in 95% of cases with a simple algorithm consisting of clinical probability assessment, D-dimer test, compression sonography, and lung scan. Pulmonary angiography or phlebography was necessary in only a few cases. The thromboembolic risk after three months was sufficiently low at 1.8%.

This impressive prospective study from two independent angiology centers could have a high impact in the validation of modern diagnostics for thromboembolism. The results show that phlebography is no longer necessary in suspected deep venous thrombosis. It shows a high impact of clinical diagnostics, D-dimer testing, and sonography. In 1995, Wells showed the importance of standardized clinical investigations in patients with suspected deep venous thrombosis.<sup>1</sup> The German Society of Phlebology has included standardized clinical investigation with D-dimer testing and duplex sonography in their guidelines for DVT.<sup>2</sup>

However, the results in the current investigation, as stated by the authors, are only representative for outpatients with suspected thromboembolism. For inpatients or in the exclusion of postoperative DVT, the situation may be different and the sensitivity of the D-dimer test and sonography may be less. In patients with a longer development of DVT, the D-dimer test might have become negative spontaneously, and an older DVT could be missed. We should keep in mind that these patients should have anticoagulation treatment because of the risk of recurrent DVT.

### REFERENCES

1. Wells PS, Hirsch J, Anderson DR. Accuracy of clinical assessment of deep venous thrombosis. *Lancet* 1995;345:1326-30.
2. Blatter W, Partsch H, Hertel T. Leitlinien zur Diagnostik und Therapie der tiefen Bein-Beckenvenenthrombose. *Phlebologie* 1998;27:84-88.