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THE CLINICAL VALUE OF ASSAYS OF FIBRIN DEGRADATION PRODUCTS, AND THEIR USE IN THE NETHERLANDS

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Abstract

Information about the status of the haemostatic balance can be derived from the end products of coagulation and fibrinolysis, i.e. soluble fibrin and fibrin degradation products (FbDP), such as D-dimer, respectively. Assays for FbDP have been available for more than 15 years. Examples are semi-quantitative latex agglutination assays, and quantitative enzyme immunoassays for D-dimer. It is known that the use of serum can lead to erroneous and even false-positive or false-negative results. Little is known about the use of the assays in the Netherlands (type of test; serum or plasma as sample; requested by which specialism; for which indications; cito assay or not; numbers of assays). To collect such data we sent out questionnaires to 116 clinical centres. On the basis of the responses received from 82 centres we can conclude that the vast majority of the centres (76) use semi-quantitative latex tests. Of these 76 centres 59 used plasma samples (28000 tests/year); and 17 used serum (4800 test/year). The assays are done at the request of gynaecologists, internists, intensive care units and cardiologists for a variety of indications such as DIC, pregnancy complications, DVT and PE. In most cases cito assays were involved.

The D-dimer assays are discussed with special reference to standardisation, (biochemical) specificity, reproducibility, and the reasons why serum can cause erroneous results.

Introduction Under normal conditions there is equilibrium between on the one hand the activity of the coagulation system, and on the other hand the activity of the fibrinolytic system. Disturbance of this equilibrium, designated as the haemostatic balance, can cause bleedings when the fibrinolytic system is relatively more active than the coagulation system, and can cause thrombotic phenomena when coagulation is more active than fibrinolysis.

An activated coagulation system leads to thrombin formation. The thrombin formed converts fibrinogen to fibrin, and activates factor XIII to factor XIIIa, which cross-links the fibrin formed. Crosslinked fibrin is insoluble.