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Laboratory tests for diagnosis of antiphospholipid syndrome – Especially for determination of lupus anticoagulant

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Antiphospholipid syndrome (APS) is a disorder that features recurrent arterial and/or venous thrombosis, as well as multiple obstetric complications associated with the presence of antibodies to phospholipid (PL)-binding protein (antiphospholipid antibodies; aPLs), including lupus anticoagulant (LA). This disorder is considered to be the most frequently acquired type of hyper-coagulation state associated with autoimmune etiology. For diagnosis, the APS classification criteria (updated in 2006) are widely used, which essentially state that APS is diagnosed when an indicative clinical finding and at least one aPL are present.

LA is an immunoglobulin that inhibits PL-dependent coagulation reactions, which are determined by such tests as activated partial thromboplastin time (APTT) and dilute Russell's viper venom time (dRVVT). When screening for LA, DRVVT is measured first and then APTT. In cases with prolonged clotting time, that is checked by a cross-mixing test using patient plasma mixed 50% with control plasma and can be improved by addition of excess PL. The antibodies to prothrombin have received focus as responsible immunoglobulins for LA, including phosphatidylserine-dependent anti-prothrombin antibody (aPS/PT). LA sometimes shows decreased FVIII activity and the presence of aFVIII activity detected by the Bethesda method, though these are regarded as false inhibitory activities in the examination.

LA is a risk factor for thrombosis and also measured as a diagnostic test for APS. However, bleeding symptoms are rare in LA-positive patients, as they demonstrate decreased activities of coagulation factors including prothrombin, a condition termed as LA-hypoprothrombinemia syndrome (LAHPS). In patients with LAHPS, inhibition of coagulation factors is sometimes detected, such as in acquired hemophilia. Therefore, accurate detection of LA is critically important.