Lupus Anticoagulans and Anticardiolipin Antibodies. Correlation with Beta 2 Glycoprotein

[a]J. FEDOROVÁ, [c]L. NOVOSADOVÁ, [b]J. LEHOTSKÝ, and [a]P.KUBISZ

[a]*National Center for Hemostasis and Trombosis, Clinic of Hematology and Transfusiology, Martin Faculty Hospital, Kollárova 2, SK-03659 Martin*

[b]*Comenius University, Jessenius Medical Faculty, Martin, Malá Hora 4, SK-03601 Martin*

[c]*Department of Clinical Hematology, Havířov Hospital, CZ-73600 Havířov*

Beta 2 glycoprotein (2GPI) is a serum component required for binding of anticardiolipin antibodies in ELISA test. It is a plasma protein which binds negative phospholipids and inhibits both the contact phase of internal coagulation cascade and protrombine activity of platelets [1]. It is present in plasma of healthy individuals in a concentration of 200–300 μmol/l. In this paper we present causuistics of a 20 years old patient with lupus anticoagulans (LA) and anticardiolipin antibodies (ACA) with fluctuant level of beta 2GPI.

Lupus anticoagulans and anticardiolipin antibodies are clinicaly relevant for their linkage with trombosis. Beta 2 glycoprotein was described as a cofactor required for binding of antiphospholipid antibodies to phospholipids [2]. It is a protein with M_r = 50 kD present also in normal plasma. Beta 2GPI may play a regulatory role in the system of protein C through inhibition of interaction between protein C and C4b-BP It has 5 domains, the fifth of which contains the binding site for phospholipids. APO H is an alternative name for beta 2GPI since at least for 40% is bound to lipoproteins.

We have repeatedly examined a patient with already diagnosed LA and ACA. Those results were proved in our laboratory and are presented in chronological manner (result not shown). In addition, we have also examined tumor markers CA 19-9 and CA 15-3 for their supposed cross-reactivity with phospholipids. We have found a dymanic character of beta 2GPI levels depending on the clinical state and therapy. Decreased beta 2GPI was found also by treatment of Anopyrin alone. After trombotic episode and subsequent anticoagulant and antisupressive therapy the level of beta 2GPI was normalized. This result suggests that either autoantibodies to beta 2GPI are formed or 2GPI binds to platelets surface and its subsequent consumtion in trombosis occurs. By means of immunosupressive therapy its concetration seemingly decreased and beta 2GPI was demasked and accesible for binding at its detection by agglutination method with microlatex beads [3].

Requirement of beta 2GPI apparently discrimates between cases with anticardiolipin antibodies in autoimmune diseases and antiphospholipid syndrome and other cases such as syphilis and other infectious diseases in which anticardiolipin antibodies are bound to cardiolipin in the absence of beta 2GPI or even presence of this protein inbibits the binding. This differentiation of antigenic specificity explains why autoimmune type of anticardiolipin antibodies is in one side linked to LA and trombosis, loss of fetus and on the other side the anticardiolipin antibodies linked with syphilis are not connected with trombosis. It is known that beta 2 GPI inhibits factor XII and prekallikrein activity on the anionic surfaces of phospholipids. Anti-beta 2GPI can increase this inhibitory activity by the increase of beta 2 GPI binding to phospholipids or by remodelation of phospholipids shape from bilayer to hexagonal orientation.

REFERENCES

1. Forastiero, R., *Trombosis and Hemostasis, 78,* 1008 (1997)
2. Perego, V., *Trombosis and Hemostasis, 77,* 123 (1997)
3. Fedorová, J., Novosadová, L., Lehotský, J., and Kubisz, P *Hematológia a transfuziológia, 1,* 36, (1997)