Murine Monoclonal Antibody 26 Raised Against Tetanus Toxoid Cross-Reacts with β_2-Glycoprotein I: Its Characteristics and Role in Molecular Mimicry

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Keywords
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Problem
Studies on experimental antiphospholipid syndrome (APS) models proved that molecular mimicry between plasma protein β_2-glycoprotein I (β_2GPI) and structure within micro-organisms or their products, might be a cause for experimental APS. Considering the heterogeneity of polyclonal antiphospholipid antibodies (aPLs), it is important to define the precise characteristics of pathogenic aPLs. To avoid the influence of polyclonality and to further analyse the connection between molecular mimicry and APS, we produced monoclonal antibodies (MAbs) against tetanus toxoid (TTd) and tested their reactivity against β_2GPI.

Method of study
In this report, we analysed the characteristics of MAb26 raised against TTd and cross-reactive with β_2GPI: its binding properties in various *in vitro* immunoassays, its specific interactions with surface epitopes expressed on apoptotic cells and its role *in vivo*.

Results
We have demonstrated that MAb26: (i) binds β_2GPI being immobilized on an appropriate surface: irradiated polystyrene plates, non-irradiated plates pre-coated with anionic phospholipids and polyvinylidene fluoride membrane; (ii) binds specifically to apoptotic but not to viable cells and the binding is β_2GPI-dependent; and (iii) induces a pathologic pregnancy outcome when passively injected into BALB/c mice.

Conclusion
This study concluded that certain subpopulations of antibodies raised against TTd and cross-reactive with β_2GPI, because of the molecular mimicry mechanism, could have pathologic potential.

Introduction

Antiphospholipid antibodies (aPLs) are heterogeneous group of antibodies associated with recurrent fetal loss and thrombosis in patients with antiphospholipid syndrome (APS).[1–3] Several murine models have been developed to study the mechanisms of fetal loss in APS.[4–6] β_2-glycoprotein (β_2GPI) is implicated as the principal antigenic target for aPLs in APS-related reproductive problems.[7] It is a 50 kDa glycoprotein that is abundant in human plasma and shares high homology between different mammalian