

## CASE OF THE MONTH

### THE PRESENCE OF ANTIPHOSPHOLIPID ANTIBODIES IN GULF WAR VETERANS EVALUATED AT WILFORD HALL MEDICAL CENTER

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Antiphospholipid antibodies (aPL) are associated with thrombosis, thrombocytopenia, fetal loss (1) and a variety of neurological syndromes (2). Recently, investigators have focused on the potential role of individual aPL in specific clinical manifestations of the aPL syndrome. For example, some evidence suggests that  $\beta$ -2 glycoprotein 1 (anti- $\beta$ 2GP1) antibodies may be more predictive of thrombotic manifestations (3), phosphatidylserine antibodies (aPS) may be more predictive of recurrent fetal loss (4), and anticardiolipin antibodies (aCL) may be more predictive of headaches (5).

We initiated a study to assess the presence of three types of aPL's (aCL, anti- $\beta$ 2GP1, and aPS), in a group of Gulf War Veterans. These veterans had high incidences of chronic headaches/migraine headaches (54.6%), memory loss (52.7%), fatigue (61.5%), joint pain (59.6%), muscle aches (43.5%), attention problems (43.1%), and sleep problems (53.8%).

This study analyzed 216 selected patient's sera that were collected at WHMC by the Comprehensive Clinical Evaluation Program (CCEP) on participants of the Gulf War for the presence of aPLs. The samples had been stored

in individual cryovials at approximately  $-70^{\circ}$  C. The antiphospholipids tested included aCL [IgG, IgM, IgA, (Corgenix)], aPS [IgG, IgM, (Corgenix)], and anti- $\beta$ 2GP1 [IgG, (INOVA Diagnostics)]. All of the assays were performed by ELISA techniques according to manufacturer's instructions. A cohort of fibromyalgic/chronic fatigue (CFS) subjects having clinical symptoms similar to the group of Gulf War Veterans, but were not Gulf War Participants were used as controls. These samples were obtained from the Department of Rheumatology at Georgetown University Medical Center, Washington DC. Results of the study can be found in table 1.

#### DISCUSSION

These results suggest that the frequency of aCL, but not aPS or anti- $\beta$ 2GP1, are higher in Gulf War Veterans than fibromyalgia/CFS patients with similar symptoms. The presence of aPS and anti- $\beta$ 2GP1 antibodies are more strongly associated with thrombosis than the presence of aCL alone. The presence of aCL alone has been described in patients exposed to a variety of infections, medication, and other medical conditions. Although, this group of Gulf War Veterans did not have

thrombosis, the clinical significance of aCL antibodies in the Gulf War Veterans is not clear and requires further study.

Previous studies have observed positive aCL levels in normal blood bank donors (IgG: 4.6-6.5%, IgM: 4.6-9.4%). Levels of PS and  $\beta$ 2GP1 antibodies are extremely low in subjects that have no personal or family history of thrombotic events. (6,7) ▲

#### REFERENCES

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	aCLs (IgG)	aCLs (IgM)	aCLs (IgA)	aPS (IgG)	aPS (IgM)	anti- $\beta$ 2GP1 (IgG)
Gulf War Veterans	86/216 (39.8%)	4/216 (1.9%)	3/216 (1.4%)	11/216 (5.1%)	14/216 (6.5%)	3/216 (1.4%)
	56/216 Low + 29/216 Mod + 1/216 High +	4/216 Low +	3/216 Low +	8/216 Low + 3/216 Mod +	11/216 Low + 3/216 Mod +	1/216 Low + 2/216 Mod +
Fibromyalgia/ Chronic Fatigue Syndrome	4/147 (2.7%)				1/147 (0.7%)	4/147 (2.7%)
	4/147 Low +				1/147 Low +	4/147 Low +

Table 1. Analysis of Antiphospholipid Antibodies in Gulf War Veterans.