

SOUTHWESTERN NEWS

Media Contact: Mindy Warren
(214) 648-3404
melinda.warren@email.swmed.edu

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UT SOUTHWESTERN RESEARCHER FINDS GENETIC CAUSE FOR GULF WAR SYNDROME

DALLAS – June 16, 1999 – A genetic trait can predispose people to Gulf War syndrome, a new study has found.

In an article published in today's issue of *Toxicology and Applied Pharmacology*, a UT Southwestern Medical Center at Dallas researcher shows why some veterans of the Gulf War may have gotten ill from certain chemical exposures while others did not.

Dr. Robert Haley, UT Southwestern's chief of epidemiology, led the study with assistance from Dr. Bert La Du and Scott Billecke from the University of Michigan Medical School.

"One of the biggest questions about Gulf War syndrome has been why one person got sick when the person next to him didn't," Haley said. "That is one of the major puzzles that made many people think the symptoms were just due to stress.

"But now we know that there appears to be a genetic reason why some people got sick and others didn't, and this genetic difference links the illness to damage from certain chemicals."

Haley's study showed that people with a gene that causes them to produce high amounts of a particular enzyme did not get sick after exposure to certain chemicals in Operation Desert Storm, while others who produce low amounts of the same enzyme did get sick.

The culprit gene is the one that controls production of type Q paraoxonase, or PON-Q, an enzyme that allows the body to fight off chemical toxins by destroying them. This particular enzyme is highly specific for the chemical nerve agents sarin and soman as well as for the common pesticide diazinon.

In some people, the gene causes the body to produce high levels of PON-Q, allowing their bodies to fight off toxins like nerve gas. But in others the gene directs the production of low levels of PON-Q, meaning a person cannot fight off even low levels of these toxic chemicals well.

Blood levels of a genetically similar enzyme PON-R, which destroys other chemicals

(MORE)

GULF WAR SYNDROME – 2

more effectively than nerve agents, were no different in the sick and well Gulf War veterans.

“In our earlier studies when we found strong statistical links between Gulf War syndrome and veterans’ reports of exposure to combinations of chemicals like pesticides and low-level chemical nerve agents, we predicted it might be due to a PON-Q deficiency, and now that’s what we have found,” Haley said. “The sick veterans in our study have low PON-Q levels in their blood, and the well ones have high PON-Q levels.

“We have found a genetic marker that appears to explain what made many of these veterans sick.”

In 1997, Haley and a group of other UT Southwestern researchers published a set of three scientific papers in *The Journal of the American Medical Association*, which concluded that some veterans suffer from brain damage caused by exposure to various combinations of chemicals during the Gulf War.

They linked three different neurological syndromes to the use of pesticide-containing flea collars, highly concentrated insect repellent and pyridostigmine bromide anti-nerve gas tablets, as well as exposure to low-level chemical nerve agents.

The current study examined the same group of men, members of the 24th Naval Mobile Construction Battalion, used in the 1997 studies. Because these studies were conducted in a single battalion of naval reservists, Haley and colleagues have planned a nationwide survey to see how strongly the new neurotoxicity syndromes are associated with low-level PON-Q enzyme levels in a random sample of Gulf War-era veterans.

Haley, who has been researching Gulf War syndrome since 1994, has published more than 100 scientific papers. He is an associate professor of internal medicine with a specialty in epidemiological research.

La Du, a professor of pharmacology and anesthesiology, is an expert on the genetics of enzymes that destroy chemical toxins, including the PON family of enzymes. Billecke performed the laboratory work.

The Department of Defense and the Perot Foundation provided funding for the study.

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