PRACTITIONER FORUM

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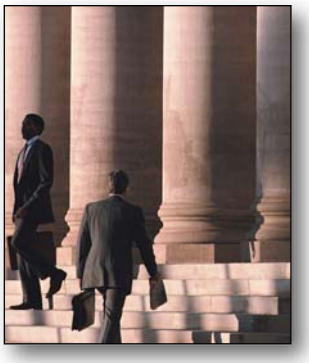

Residual Effects of Cold Injury

Frequency of Symptoms and Clinical Diagnoses Among the "Chosin Few"

Throughout military history, troops have had to grapple with freezing temperatures as dangerous as the enemy itself. During the Revolutionary War, over 3,000 of George Washington's men perished from cold, hunger, and disease in Valley Forge without a single shot being fired. And in 1812, the brutal Russian winter decimated most of what remained of Napoleon Bonaparte's army during the long retreat from Moscow.[1]

Cold weather continued to be a formidable foe into the modern military age. The battle at the Chosin Reservoir during the Korean War, spanning the months of November and December 1950, was fought in perhaps the coldest conditions ever faced by U.S. military troops. Temperatures have been estimated at between –10° and –50° F, with windchill estimates dropping to as low as –100° F.[1] No shelter was available for soldiers in the battle, and many had inadequate clothing. In addition, soldiers frequently went days at a time with no chance to remove frozen boots or clothing for the purpose of rewarming. While some soldiers were injured so badly that immediate evacuation and treatment were necessary, most continued to fight, often ignoring painful or even frozen body parts.

Based on what's believed to be credible evidence, the VA grants presumptive service connection for certain symptoms and clinical diagnoses to veterans who are known to have been exposed to extreme cold during active duty.[2] It's also been recognized that such findings may not become apparent for decades after the acute injury.

Yet for many veterans who sustained cold injuries in battle, lingering symptoms may be attributed erroneously to other causes, such as diabetes. This problem is compounded by inadequate surviving documentation of cold injuries from the Chosin Reservoir, either because soldiers didn't seek medical care at the time or because paperwork was lost.[1]

In recognition of the importance of an accurate diagnosis to both the physical and psychological well-being of the patient, this column examines the frequency of certain known residuals of cold injury in a select group of veterans. The goal is to raise providers' awareness of the connection between these conditions and cold injury.

ANALYZING THE "CHOSIN FEW"

An investigative team from the VA North Texas Ambulatory Care Service conducted a study that included only those combat veterans who actively participated in the Chosin Reservoir Campaign during November and December 1950. All study participants, therefore, were known to have been exposed to extreme cold for days or weeks at a time.

On each study participant, we performed a standard VA Cold Injury Protocol Examination. Symptoms were elicited through history taking, and physical findings were documented after careful examination by a clinical team with expertise in the residual effects of cold injury.

We recorded both those symptoms experienced at the time of the acute injury and current symptoms. For the purposes of this study, however, we report only on current symptoms and diagnoses.

Since it's been shown that the results of nerve conduction studies in cases of cold injury can be highly variable,[3–8] we didn't rely on these tests for the diagnosis of peripheral neuropathy. Rather, the condition was diagnosed or excluded by careful assessment of light touch, pain, vibratory, and proprioceptive

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Table. Frequency of cold injury residuals* in a group of veterans from the VA North Texas Ambulatory Care Service

Finding	Frequency (n = 41)
Cold sensitivity	100%
Pain	95%
Fungal infections	70%
Skin color change in area of cold injury	63%
Peripheral neuropathy	54%
History of hyperhydrosis	49%
Arthritis of hands or feet	22%
Raynaud's phenomenon	17%
Atrophy in area of cold injury	12%
Skin cancer in frostbite scar areas	5%

*Symptoms and clinical diagnoses recognized by the VA as residuals of cold injury.

sense. We did, however, require that arthritis be demonstrated radiographically.

RESIDUALS OF COLD INJURY: HOW COMMON?

A total of 41 veterans were enrolled in the study and examined between May 22, 2001 and January 6, 2003. We calculated the frequency of the following symptoms and clinical diagnoses recognized by the VA as residual effects of cold injury: cold sensitivity, pain, fungal infections, skin color change in the areas of cold injury, clinical evidence of peripheral neuropathy, history of hyperhydrosis, arthritis of the hands or feet, Raynaud's phenomenon, atrophy in the areas of cold injury, and skin cancer in frostbite scar areas (Table).

IMPLICATIONS OF THESE FINDINGS

While this study isn't intended to prove that any sign or symptom is caused directly by cold injury, it does demonstrate the frequency of historic and clinical findings, known to be long-term sequelae of cold injury, in a group of veterans who fought under conditions likely to produce such injuries.

It's been nearly 53 years since the Chosin Reservoir conflict—and almost 59 years since World War II's Battle of the Bulge, which also was fought under conditions of extreme cold. The time has come to acknowledge the long-term effects of these battles on the men and women who endured so much to defend our country. It's our hope that this study will educate VA examiners further about residual cold injury, so that more accurate evaluations and diagnoses can be made. ●

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