Agent Orange: Management of Patients Exposed in Vietnam

Anne Beaulieu, RN, BA, OCN®, and Kristen Fessele, RN, MSN, AOCN®

Since the Vietnam War ended in 1975, numerous studies have been conducted to determine if an association exists between Agent Orange exposure and certain disabling conditions, specifically cancer. Although a definite causal relationship has not yet been established, sufficient data associate Agent Orange with certain conditions. Because of their advancing age, similar to other baby boomers, Vietnam veterans are at a higher risk of developing malignancies. However, their exposure to Agent Orange also may increase their risk for cancer and other associated diseases. This article examines the latest findings of scientific research sponsored by the Department of Veterans Affairs and discusses the importance of well-informed oncology nurses when providing care for patients with cancer exposed to Agent Orange.

Key Words: environmental exposure, herbicides

During the Vietnam War, U.S. military forces sprayed approximately 20 million gallons of herbicides over South Vietnam from 1962–1971 (15th Field Artillery Regiment, 2002). These herbicides were used for two purposes: to defoliate forest areas that might conceal enemy troops and to destroy enemy crops (*Encyclopedia Britannica,* 2002). Agents Orange, Blue, and White, the three major defoliants, were among the 15 rainbow herbicides used during the war. Agent Orange, the most infamous and widely used, was a mixture of several toxic chemicals, including 2,4-D; 2,4,5-T; and 2,3,7,8-T (tetrachlorodibenzo-p-dioxin or dioxin) (15th Field Artillery Regiment, 2002).

Hundreds of U.S. troops were exposed to Agent Orange, as well as millions of Vietnamese citizens (Recer, 2002). After the war ended, many veterans began to develop an array of health problems. Twenty years later, this prompted a number of U.S. governmental organizations, such as the Institute of Medicine (IOM), the National Academy of Science (NAS), and the U.S. Department of Veterans Affairs (DVA) in collaboration with the Centers for Disease Control and Prevention (CDC), to instigate studies to examine whether Agent Orange exposure was related to cancer and other diseases (15th Field Artillery Regiment, 2002). The results of these studies have been conflicting and inconclusive.

Evaluation of subjects was complicated by the inability to determine the amount of Agent Orange exposure for individual veterans. For instance, individuals directly involved in air-spray programs, such as "Operation Ranch Hand," are assumed to have had high levels of exposure. Aside from existing knowledge regarding these specific groups, gathering accurate information on exposure levels among other veterans is nearly impossible. For this reason, most studies were based on the health outcomes of people exposed to dioxin or herbicides in environmental or occupational settings, rather than Vietnam veterans themselves (IOM, 2000). However, other studies used veterans as subjects and determined exposure level by evaluating the presence of dioxin in serum or tissue samples, using employment or activity records, or investigating the location of the veteran during herbicide spraying. Because of the ambiguous nature of these methods, an exact association between herbicidal exposure and cancer etiology cannot be determined (IOM, 2000).

In 1985, DVA provided CDC with funding to conduct research to investigate the risk of cancer in veterans exposed to Agent Orange. The Epidemiology Study was a combination of three studies: the Vietnam Experience Study, the Agent Orange Exposure Study, and the Selected Cancers Study. In 1990, the Selected Cancers Study findings indicated that Vietnam veterans were not at increased risk for developing the five types of cancers studied: soft-tissue sarcoma and other sarcomas, non-Hodgkin's lymphomas, Hodgkin's disease, nasopharyngeal cancer, and liver cancer. The study could not conclude whether exposure to Agent Orange was linked with increased risk of cancer (U.S. Veteran Information, 2002).

On the contrary, in 1993, NAS reported that three types of cancer were found to have "sufficient evidence" of an association with herbicidal exposure. They were soft-tissue sarcoma, non-Hodgkin's lymphoma, and Hodgkin's disease. NAS also grouped the types of cancers studied into these categories: limited or suggestive evidence, inadequate or insufficient evidence, and limited or suggestive evidence of no association between certain types of cancers and exposure to herbicides used in Vietnam (U.S. Veteran Information, 2002). These are listed in Figure 1.

Epidemiology

According to the American Cancer Society (ACS), an estimated 1,334,100 new

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