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Association between Agent Orange exposure and nonmelanotic invasive skin cancer: a pilot study

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Abstract

Background: Agent Orange, or 2,3,7,8-tetrachlorodibenzodioxin, has been shown to cause indirect DNA damage, producing malignancies. However, its connection to nonmelanotic invasive skin cancer is unclear. This study investigated whether 2,3,7,8-tetrachlorodibenzodioxin exposure increases the incidence of this cancer.

Methods: The authors retrospectively reviewed the medical records of 100 consecutive male patients with Fitzpatrick skin types I through IV who enrolled in the Agent Orange registry at the Veterans Affairs Hospital of Washington, D.C., between August of 2009 and January of 2010.

Results: The study population's mean age was 65.7 years (range, 56 to 80 years). 2,3,7,8-Tetrachlorodibenzodioxin exposure included living or working in contaminated areas (56 percent), actively spraying it (30 percent), or traveling in contaminated areas (14 percent). Fifty-one percent of patients had nonmelanotic invasive skin cancer; 43 percent had chloracne; and 26 percent had other malignancies, such as prostate (14 percent), colon (3 percent), or bladder cancer (2 percent). The nonmelanotic invasive skin cancer incidence rate in the study population (51 percent) was significantly higher than the national age-matched incidence rate (23.8 percent; $p < 0.001$). High Fitzpatrick skin type score ($p = 0.010$) and dark eye color ($p = 0.036$) were associated with a decreased incidence of the cancer. Exposure by means of active spraying (73 percent versus 67 percent; $p = 0.003$) and presence of chloracne (81 percent versus 28 percent; $p < 0.001$) were associated with increased nonmelanotic invasive skin cancer incidence rates.

Conclusions: 2,3,7,8-Tetrachlorodibenzodioxin exposure appears to be associated with the development of nonmelanotic invasive skin cancer. Further studies are warranted to determine the relative risk within this patient population and to determine appropriate management strategies.

Clinical question/level of evidence: Risk, II.

Comment in

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Reply: association between agent orange exposure and nonmelanotic invasive skin cancer: a pilot study.

Clemens MW.

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