F33 Depleted Uranium and Cancer Risk: A Case Report

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Learning Overview: The goal of this presentation is to examine the effects of uranium exposure on human health and disease. In this presentation, the case of an Italian soldier who has contracted brain cancer is discussed. The case of human uranium exposure during military missions came to the attention of the judicial authorities during arranged investigations of inspection.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the relationship between environmental pollution by depleted uranium and the possible effects on cancer.

The purpose of this work is to analyze the relationship between environmental pollution from depleted uranium and possible health effects. Depleted Uranium (DU) is generally considered an emerging pollutant and is a known carcinogen. DU has been hypothesized to represent a hazardous element both for exposed soldiers and the inhabitants of polluted areas in the war zones. In Afghanistan and Iraq, it was shown that the illnesses and deaths of military personnel were related to environmental pollution caused by the explosion of depleted uranium munitions. The harmful effects on personnel exposed without protection are known, especially in the famous "Gulf syndrome" that affects many United States military directly (with oncological diseases) and indirectly (malformations of the children of soldiers returning from Iraq). These diseases were then recognized by the American government and by the military and these families were compensated. Also, the Balkan region suffers from DU pollution in many areas and the effects of this can damage public health through poisoning and the increase in incidence of various cancers. The overall incidence of lung cancer, leukemia, and lymphoma has increased in Italian soldiers exposed and several judgments of the Court of Cassation have recognized the causal link between exposure to DU and the development of tumors, condemning the Ministry of Defense to pay damages.

Unlike the United States military, Italian soldiers on mission in these territories did not have the necessary protective devices and Italian military personnel were in contact with DU. The equipment provided for the military personnel was not adequate and did not meet the standards established for the territories with possible contamination by Nuclear, Biological and Chemical (NBC); the army has been exposed to significant risk factors (i.e., air pollution, toxic contamination, exhaust fumes, and chemical solvents used to clean weapons) that would contribute to cancer development.

Case Report: An Italian navy sergeant who was exposed to DU during missions in Kosovo, Yugoslavia, and Albania from 1999 to 2001 and who has no cancer or anamnesis for cancer. The military has been exposed to carcinogenic risk factors, in particular the toxic contamination caused by the dispersion of heavy minerals in the environment produced by the explosion of DU munitions and the contamination of water and air in the workplace. In 2006, after the onset of neurological symptoms (convulsions), the Italian soldier was admitted to the hospital and was diagnosed with a brain tumor—oligoastrocytoma. The tumor was treated surgically and with radiation, yet eventually caused the sergeant's death in 2013.

Although oligoastrocytoma does not belong to tumors more frequently related to depleted uranium exposure, exposure to this substance is highly likely to have led to the onset of cancer and subsequent death.

Oligoastrocytoma, Depleted Uranium, Cancer Risk

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