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Metal and Radiation-Induced Toxic Neuropathy (TN) in Two Navajo Sisters

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Outline

Section Description

Abstract 2042 Neurodevelopmental Disabilities Poster Symposium, Tuesday, 5/4

Introduction: "Navajo Neuropathy (NN)" was first reported in 1959 in some Navajo. It was postulated to be a "genetic" disorder without any scientific proof. Thirty of 37 with this "syndrome" have died from fulminant liver disease or systemic infections. This "syndrome" includes progressive to static neuropathy, cataracts, and subcortical disease (by MRI) with an onset in early childhood. Purpose/ Methods: Detailed clinical, genetic and environmental risk assessments of two Navajo sisters (27 and 28 years of age), presenting with "NN", were evaluated. Results: Extensive genetic testing was negative for both; but environmental health risk assessments revealed a toxic neuropathy from multiple toxicant exposures from abandoned surface mines during year-round herding. They had in utero and postnatal exposures to chemotoxic and radiotoxic levels of uranium (U) [and other radionuclides] and toxic levels of lead (Pb) in abandoned U mine pit waters, the exclusive source for drinking water and diluting infant formula. Additional fetal and postnatal toxicant exposures were to Pb, arsenic, and cadmium, in sheep meat from animals contaminated through vegetation and pit waters. The sisters had an in utero U/polonium radiation dose sufficient for CNS damage. Modeled in utero exposure to highly fetoneurotoxic Pb occurred via maternal blood lead level throughout pregnancy-embryonic and fetal stages of 40 [μ g/dl]. Further toxicity arose from other contaminant intakes during pregnancy in (μ g/dl): Cd, 656; As, 89. These toxic intakes of multiple contaminants continued postnatally. Conclusion: We conclude that there is no genetic basis for this disease. Its etiology is far more likely excessive exposure to metal toxicants and radionuclides in utero and postnatally thereby resulting in TN and subcortical CNS disease.

Section Description

May 1-4; Saturday - Tuesday; Moscone Center, San Francisco, CA

NEUROLOGY