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Video Interview

Association Between World Trade Center Exposure and Excess Cancer Risk

Jiehui Li, MBBS, MSc

James E. Cone, MD, MPH

Amy R. Kahn, MS

Robert M. Brackbill, PhD, MPH

Mark R. Farfel, ScD

Carolyn M. Greene, MD

James L. Hadler, MD, MPH

Leslie T. Stayner, PhD

Steven D. Stellman, PhD, MPH

THE TERRORIST ATTACKS ON THE World Trade Center (WTC) on September 11, 2001, claimed more than 2700 lives and exposed hundreds of thousands of people to dust, debris, pulverized building materials, and potentially toxic emissions, resulting in short- and medium-term health effects.¹⁻⁶ The dust, smoke, and aerosols were complex mixtures of volatile chemicals and respirable particulate matter less than 2.5 μm in diameter and contained known and suspected carcinogens including asbestos, silica, benzene, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, volatile organic compounds, and numerous metals.⁷⁻¹⁰

The presence of carcinogenic agents raises the possibility that exposure to the WTC environment could eventually lead to cancers. Thus far, the only systematic examination of cancer incidence is a study of 9853 male firefighters employed by the Fire Department of the City of New York (FDNY).¹¹ Zeig-Owens et al¹¹ reported 19% excess incidence for all cancer sites combined among WTC-exposed firefighters com-

Context The terrorist attacks of September 11, 2001, resulted in the release of known and suspected carcinogens into the environment. There is public concern that exposures may have resulted in increased cancers.

Objective To evaluate cancer incidence among persons enrolled in the World Trade Center Health Registry.

Design, Setting, and Participants Observational study of 55 778 New York State residents enrolled in the World Trade Center Health Registry in 2003-2004, including rescue/recovery workers ($n=21\,850$) and those not involved in rescue/recovery ($n=33\,928$), who were followed up from enrollment through December 31, 2008. Within-cohort comparisons using Cox proportional hazards models assessed the relationship between intensity of World Trade Center exposure and selected cancers.

Main Outcome Measures Cases were identified through linkage with 11 state cancer registries. Standardized incidence ratios (SIRs) adjusted for age, race/ethnicity, and sex were computed with 2003-2008 New York State rates as the reference, focusing on cancers diagnosed in 2007-2008 as being most likely to be related to exposure during September 11 and its aftermath. The total and site-specific incidence rate differences (RDs) per 100 000 person-years between the study population and the New York State population in 2007-2008 also were calculated.

Results There were 1187 incident cancers diagnosed, with an accumulated 253 269 person-years (439 cancers among rescue/recovery workers and 748 among those not involved in rescue/recovery). The SIR for all cancer sites combined in 2007-2008 was not significantly elevated (SIR, 1.14 [95% CI, 0.99 to 1.30]; RD, 67 [95% CI, -6 to 126] per 100 000 person-years among rescue/recovery workers vs SIR, 0.92 [95% CI, 0.83 to 1.03]; RD, -45 [95% CI, -106 to 15] per 100 000 person-years among those not involved in rescue/recovery). Among rescue/recovery workers, the SIRs had significantly increased by 2007-2008 for 3 cancer sites and were 1.43 (95% CI, 1.11 to 1.82) for prostate cancer ($n=67$; RD, 61 [95% CI, 20 to 91] per 100 000 person-years), 2.02 (95% CI, 1.07 to 3.45) for thyroid cancer ($n=13$; RD, 16 [95% CI, 2 to 23] per 100 000 person-years), and 2.85 (95% CI, 1.15 to 5.88) for multiple myeloma ($n=7$; RD, 11 [95% CI, 2 to 14] per 100 000 person-years). No increased incidence was observed in 2007-2008 among those not involved in rescue/recovery. Using within-cohort comparisons, the intensity of World Trade Center exposure was not significantly associated with cancer of the lung, prostate, thyroid, non-Hodgkin lymphoma, or hematological cancer in either group.

Conclusions Among persons enrolled in the World Trade Center Health Registry, there was an excess risk for prostate cancer, thyroid cancer, and myeloma in 2007-2008 compared with that for New York State residents; however, these findings were based on a small number of events and multiple comparisons. No significant associations were observed with intensity of World Trade Center exposures. Longer follow-up for typically long-latency cancers and attention to specific cancer sites are needed.

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Author Affiliations: New York City Department of Health and Mental Hygiene, Long Island City, New York (Drs Li, Cone, Brackbill, Farfel, Greene, Hadler, and Stellman); Bureau of Cancer Epidemiology, New York State Department of Health, Albany (Ms Kahn); Division of Epidemiology and Biostatistics, School of Public Health, University of Illinois, Chicago (Dr Stayner); and Department of

Epidemiology, Mailman School of Public Health, Columbia University, New York, New York (Dr Stellman).

Corresponding Author: Jiehui Li, MBBS, MSc, World Trade Center Health Registry, New York City Department of Health and Mental Hygiene, 42-09 28th St, 7th Floor, Long Island City, NY 11101 (jli3@health.nyc.gov).

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