

Ionizing radiation exposure promotes fusion oncogene formation

October 26 2013

The accident at the Chernobyl nuclear power plant exposed hundreds of thousands of individuals to high levels of ionizing radiation. In the years immediately following the disaster, there was a sharp increase in the number of papillary thyroid cancers (PTC) in patients that were children at the time of the explosion.

In this issue of the *Journal of Clinical Investigation*, James Fagin and colleagues at Memorial Sloan-Kettering Cancer Institute, examined tissues from Ukrainian PTC patients that were children at the time of the Chernobyl catastrophe and identified their cancer-driving mutations.

The authors found that the majority of patient tumors had [chromosomal rearrangements](#) that resulted in fusion oncogenes. Many of these fusion events promoted upregulation of MAPK signaling, which is a common cancer-associated pathway. In contrast, fusion oncogenes were less common in PCT tumors from patients from the same geographical region, but had not been exposed to radiation.

In the accompanying commentary, Massimo Santoro and Francesca Carlomagno of the University of Naples discuss how this study provides new insight into how ionizing radiation exposure promotes cancer development.

More information: Identification of kinase fusion oncogenes in post-Chernobyl radiation-induced thyroid cancers, *J Clin Invest.* [DOI: 10.1172/JCI69766](#)

Oncogenic rearrangements driving ionizing radiation–associated human cancer, *J Clin Invest.* 2013;123(11):4566–4568. DOI: [10.1172/JCI72725](https://doi.org/10.1172/JCI72725)

Provided by Journal of Clinical Investigation

Citation: Ionizing radiation exposure promotes fusion oncogene formation (2013, October 26) retrieved 20 March 2024 from <https://medicalxpress.com/news/2013-10-ionizing-exposure-fusion-oncogene-formation.html>

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