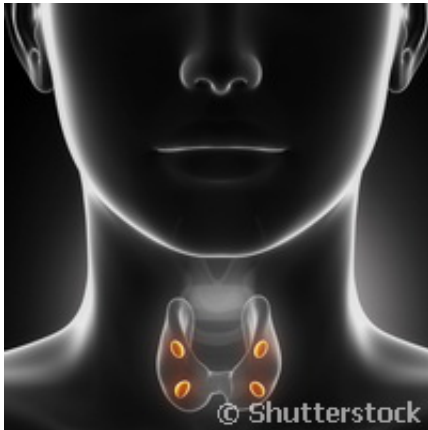


Genetic factors behind radiation-induced thyroid cancer

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Scientists have long sought to determine whether heredity is one of the factors responsible for increased risk of thyroid cancer, but their results have been inconclusive... until now.

A team of European researchers working in the EU-funded project GENRISK-T ('Genetic component of the low dose risk of [thyroid cancer](#)') established that genetic factors can increase the risk to humans to radiation-induced thyroid cancer. The research also provided a better understanding of the risk of getting thyroid cancer from exposure to low doses of radiation.

The researchers, led by the Helmholtz-Centre in Munich, Germany, investigated thyroid [cancer risk](#) and radiation exposure at low doses, with a particular focus on the mechanisms underlying the disease.

The [thyroid gland](#) can concentrate and store iodine, but problems arise when radioactive iodine isotopes enter the gland and are stored with the same rate of reactions as non-[radioactive iodine](#).

High doses of radioiodine result in damaged iodine-

incorporating and neighbouring cells, but low doses of radioiodine can also generate tumours of the thyroid. According to the researchers, low doses increase cancer risk in susceptible individuals.

The project partners also isolated gene expression fingerprints of radiation-induced thyroid cancer in patients who have undergone radiotherapy, as well as [thyroid cancer](#) among people exposed in the aftermath of the Chernobyl accident.

For people exposed in the aftermath of the Chernobyl accident, the GENRISK-T team identified a sub-set of tumours with a chromosomal copy number increase (an alteration to the DNA of a genome) affecting a specific chromosome. The same was not found in sporadic cases. The researchers performed whole genome genotyping on patients; 28 were radiation-exposed cases and 24 were non-exposed cases.

The identification of these genetic fingerprints will speed up the application of molecular epidemiological approaches to assessing the risk of low doses of radiation.

More information: GENRISK-T factsheet: cordis.europa.eu/projects/rcn/85502_en.html

Provided by CORDIS

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