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Genotoxic risk of treatment with ¹³¹I and genetic factors of susceptibility to thyroid cancer

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In view of the fact that the number of thyroid cancers is increasing in Bolivia and therefore the treatment using ¹³¹I, in this study we determined the magnitude of the genotoxic damage after treatment in patients with thyroid cancer using the test of Micronuclei in binucleated cells and the comet assay ($P = 0.000$, Wilcoxon Test). Finding statistically significant data of damage in patients with both biomarkers. Furthermore, in contrast to 5% to 10% of the population that presents with nodules, thyroid cancer is the cause of less than 1.6% of all cancers. Therefore, it is a priority to find tracking methods capable of identifying individuals at risk of cancer among nodule carriers. Some clinical and epidemiological characteristics, among other factors are important in this identification. Molecular biology techniques allow the identification of genetic polymorphisms in this study of the rs2145418s and rs4658973 polymorphisms that make up the basis of thyroid cancer susceptibility. In the population analyzed, SNP rs4658973 showed an association with thyroid cancer, while SNP 2145418 showed no association. The results obtained in the genotypes with the variant allele G of the marker rs4658973 showed a protection to thyroid cancer with an odds ratio of 0.52. Regarding the modulating effect of environmental genetic factors, in the SNP rs4658973 a reduction of the risk associated with the tobacco habit could be observed as protection to thyroid cancer with an OR = 5.44 (CI: 1.62 - 18.26) The findings confirm the usefulness of the micronucleus assays in binucleated cells and the comet for the performance of human biomonitoring studies to evaluate genotoxic damage, as well as the importance of determining the polymorphisms of genes related to thyroid cancer as biomarkers of susceptibility.

Biography

Noemi Sandra Tirado Bustillos is the professor of Biochemistry and Molecular Biology at Universidad Mayor de San Andres (UMSA), Head of Genotoxicology Unit at Genetic Institute – Medicine School – UMSA- La Paz – Bolivia. Secretary of the Executive Committee of the Latin American Association of Mutagenesis, Carcinogenesis and Environmental Teratogenesis, (ALAMCTA). President of the Bolivian Society of Mutagenesis, Carcinogenesis and Environmental Teratogenesis (SBOMCTA). She is the coordinator of a research regarding environmental toxicology studies (pesticide exposure) – Swedish cooperation, Bolivian coordinator of a grant related to Arsenic Metabolism in women exposed to contaminated drinking water, she is the author/co-author of 25 scientific papers, research papers, all of them concerning biomonitoring of people exposed to environmental contaminants as Heavy metals, pesticides, chemicals (¹³¹I, Formaldehyde) and radiations and conferences worldwide. She is the recipient of several national and international award, Chairperson of The XIX International A. Hollaender Courses by the IAEMS – 2015, Member of Organizing Committee of X ALAMCTA Congress 2016- Uruguay, Member of Organizing Committee of X ALAMCTA Congress 2018- Paraguay.

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