BIOMARKER STUDIES IN IONIZING RADIATION AND CYTOSTATIC EXPOSURE

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Objective: In Hungary, employer should perform risk assessment in case of occupational carcinogenic exposure, by the law. Biological monitoring provides opportunity to identify the high-risk group among medical personnel.

Materials and methods: After giving detailed instructions to the employees of an oncology department under study several types of genotoxicity tests were carried out. A multi-endpoint monitoring panel was applied in biological samples of employees exposed to genotoxic agents (cytostatics, ionizing radiation) to assess the risk and its degree. Analyses of micronuclei (MN), sister chromatid exchanges (SCE) and in one case chromosome aberration (CA) test were applied as genotoxicity testing methods. Urinary mutagenicity *Salmonella* (Ames) test was also performed. It is aimed at detection of the internal dose of exposing chemical agents or their metabolites in the human body.

Results and conclusion: Ames test's results confirm the existence of mutagenic exposure. Cytogenetic tests (CA, MN, SCE) were used as early biological effect markers of mutagenicity. CA and MN analyses are applicable for biological dosimetry of radiation exposure. In the MN test one outlier value was observed. This sample also showed alteration in the CA test. Considering the lack of radiation exposure in the anamnesis the employee's closest relatives were also examined. Results suggest rather the genetic background was responsible for the individual deviations. In the Ames test, existence of mutagenic exposure was confirmed after enzymatic deconjugation, but it probably does not mean individual risk, since no effects appeared at the level of biologically effective dose (SCE).