

Studio degli effetti genotossici da esposizione a radiazioni cosmiche nel personale aeronavigante mediante tecniche citogenetiche e molecolari

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KEY WORDS

Crew members; cosmic radiations; DNA damage; chromosomal aberrations; cytogenetics; Comet assay; cancer risk

SUMMARY

«Evaluation of genotoxic effects caused by cosmic radiation exposure in flight personnel using cytogenetic and molecular techniques». **Background:** *The ever-increasing use of air travel suggests the need to study health risks in flight personnel, by means of correct exposure assessment and evaluation of genotoxic effects.* **Objectives:** *After taking into consideration occupational risk and possible confounding factors, we studied 48 pilots and flight technicians engaged on long-haul flights together with a control group of 48 ground staff, with the aim of evaluating genotoxic effects of cosmic radiation exposure. On 36/48 subjects we also evaluated the presence of DNA damage (single and double strand breaks).* **Methods:** *Traditional cytogenetics, the micronucleus test and FISH analysis, were used to study chromosome aberrations, micronuclei and translocations. The Comet test was used to analyze direct DNA damage (single and double strand breaks).* **Results:** *Our findings indicated a significant increase in gaps and breaks and a significant increase of frequency ratio for traslocations in pilots compared to controls, but revealed a non-significant difference in unstable aberrations and micronuclei. The Comet test did not show any significant increase of DNA damage in flight personnel with respect to ground staff.* **Conclusions:** *The possibility of a correlation between traslocations and cancer risk emphasizes the need to adopt preventive measures for air flight personnel.*

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