Early genotoxic effects from exposure to environmental pollutants young people from South Italy

Margherita Lavorgna

M Lavorgna[1], S Angelillo[1], M Gentile[1], R Nugnes[1], E Orlo[1], C Russo[1], M Isidori[1]
[1]DiSTABiF, Università della Campania, Caserta, Italy
Contact: margherita.lavorgna@unicampania.it

Children and young people are particularly sensitive to the environmental pollution which is closely related to degenerative diseases. Several studies show that a genotoxic damage during young age can increase the risk of chronic diseases in adulthood. The young people are more vulnerable than adults to the environmental pollutants because they spend more time outdoors, they have immaturity of some organs and of the mechanisms involved in the cellular repair. In the present study, the early biological effects of exposure to a particularly polluted area of Southern Italy were evaluated in 200 children (6-10 year-old) and 100 young people (18-25 year-old). This area, worldwide known as Sarno basin, is characterized by strong anthropization, many agro-food processing industries, massive use of fertilizers and pesticides in agricultural practices and a strong river pollution. The comet assay was chosen because it reflects cumulative exposure to a variety of environmental factors and it was performed on salivary leukocytes in the children selected for the survey, while in the young people the DNA damage was evaluated in human peripheral blood lymphocytes. As in previous studies were not find significant differences between salivary leukocytes and blood lymphocytes we preferred the sampling of saliva for the children to avoid bloody practices. Furthermore, before cell sampling the children's parents were interviewed using an ad hoc questionnaire designed to gather additional information about exposure sources. A questionnaire was administered also to the young people to have more information on their lifestyle and some characteristic of the area of exposure (vehicular traffic and so on). The results showed a clear damage from exposure in the children differently from young people.

Key messages:

- Comet assay was performed in vitro on lymphocytes of 200 children (6-10 year-old) and 100 young people (18-25 year-old) exposed to a particularly polluted area of Southern Italy.
- An evident DNA damage was observed in lymphocytes coming from children; no genetic material alterations were observed in young people.