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Blood lymphocytes cytotoxicity monitoring of hospital nurses occupationally exposed to anti-neoplastic drugs

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Anti-neoplastic agents are extremely active biological compounds and their action is non-selective. Oncology nurses are exposed at the workplace to a wide spectrum of these agents in sub therapeutic concentrations might face unknown biological consequences which are always a serious health problem. The purpose of this study is to assess biological and cellular alteration in blood lymphocytes of nurses who work in chemotherapy wards and compare the obtained data to those of nurses who work in other wards. All nurses who work in chemotherapy wards were selected with enter and exit criteria clarified by medical and para medical tests. Demographic data such as age, sex, time of exposure, smoking status and alcohol drinking were collected and blood samples were taken. Control nurses who work in other wards of hospitals were chosen by the same criteria imposed for oncology nurses. All cytotoxicity parameters (cell viability, ROS formation, MMP collapse, lysosomal membrane damage, lipid peroxidation, caspase 3 activity and apoptosis phenotype) in exposed oncology nurses were significantly ($p < 0.001$) higher than those of unexposed control nurses. Our results indicate that the lymphocytes of oncology nurses exposed to anti-neoplastic drugs are more susceptible to oxidative stress than controls group. Hence, we should prevent hospital oncology nurse from contacting with possible risks such as inhalation of aerosols, particles and droplets via. direct skin or eyes contact by spraying, swallowing of chemotherapeutic agents due to poor health conditions or dispersal of anti-cancer drug, or injection as a result of scarring by the sharp tools.

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