INVESTIGATION OF HEMATOLOGICAL CHANGES, SERUM TNF-α AND IFN-γ LEVEL IN AN INADVERTENT RADIUM-226 (226Ra) IRRADIATED PERSON IN HILLA CITY, NADER 3 DISTRICT, IRAQ

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Aim: The purpose of the present bio-screening study was to detect the relationship and correlation between the TNF-α and IFN-γ level and hematological changes in an inadvertent radium-226(226Ra) irradiated person.

Methods: Forty two blood samples were collected from an inadvertent radium-226 (226Ra) irradiated person. The control group comprised of healthy individuals with no history of irradiation. Sandwich ELISA was used according to the manufacturer’s instructions to detect inflammatory cytokines. Statistically, T-test was used to determine the significant differences between groups.

Results: A significantly increasing high level was found in serum TNF-α and IFN-γ in the inadvertent radium irradiated person when compared with the control group. The different age of groups did not show any significant differences in inflammatory cytokine serum level. The results reveal negative correlation between TNF-α and IFN-γ and complete blood count.

Conclusions: Radium irradiation can cause changes in pro-inflammatory cytokine (TNF-α and IFN-γ) serum levels, the significantly increasing level of TNF-α and IFN-γ in different age group as compare with control suggests using them as surrogate biomarker for irradiation and the present study suggest using tiny doses of radium to induce TNF-α and IFN-γ interleukins (as immune stimulator).

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