

عنوان مقاله:

A Novel Biological Dosimetry Method for Monitoring Occupational Radiation Exposure in Diagnostic and Therapeutic Wards: From Radiation Dosimetry to Biological Effects

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خلاصه مقاله:

Background and Objective: Professional radiation workers are occupationally exposed to long-term low levels of ionizing radiation. Occupational health hazards from radiation exposure, in a large occupational segment of the population, are of special concern. Biological dosimetry can be performed in addition to physical dosimetry with the aim of individual dose assessment and biological effects. **Methods:** In this biodosimetry study, some hematological parameters have been examined in ۴۰ exposed and ۴۰ control subjects who were matched by gender, age and occupational records (± 3 years) in Kermanshah hospitals in Iran (۲۰۱۳-۲۰۱۴). The occupational radiation dose was measured by personal dosimetry device (film badges). The data was analyzed using SPSS V.۲۰ and statistical tests such as two-sided Student's t-test. **Results:** Exposed subjects had a median exposure of 0.68 ± 1.58 mSv/year by film badge dosimetry. Radiation workers with at least a ۱۰-year record showed lower values of Mean Hemoglobin (Hb) and Mean Corpuscular Volume (MCV) compared to the control group ($p < 0.05$). The mean value of Red Blood Cells (RBCs) in personnel working in Radiology departments seemed to show decrease in comparison with other radiation workers. **Conclusion:** Although the radiation absorbed doses were below the permissible limits based on the ICRP, this study showed the role of low-level chronic exposure in decreasing Hb and MCV in the blood of radiation workers with at least ۱۰ years records. Therefore, the findings from the present study suggest that monitoring of hematological parameters of radiation workers can be useful as biological dosimeter, and also the exposed medical personnel should carefully follow the radiation protection instructions and radiation exposure should be minimized as possible.

کلمات کلیدی:

Biological Dosimetry, Radiation Exposure, Radiation dosimetry, Biological Effects

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