Radiation Doses to Staff in a Nuclear Medicine Department

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Objectives: To measure external radiation doses and estimate internal radiation doses (due to the process of radionuclide injection) to staff members working in a nuclear medicine department over a 1-year period; to assess the possible radiation doses to staff members in order to determine whether classification of radiation workers is necessary. Methods: Radiation doses to 4 nuclear medicine physicians, 8 radiographers, and 2 laboratory attendants were measured by digital pocket dosimeters. Results: After correction for background natural radiation dose, the mean annual radiation dose to the physicians was 0.29 ± 0.21 mSv. This was lower than the mean annual radiation dose to the radiographers and 1.97 ± 0.05 mSv (p = 0.064) to the laboratory attendants, respectively. The mean radiation dose to the radiographers performing data acquisition and radionuclide injection (1.82 ± 1.08 mSv) was not different from that of the radiographers performing data acquisition only (2.53 ± 0.47 mSv) [p = 0.439]. An empirical formula was applied to compute the possible risk of receiving an internal dose in the process of radionuclide injection. The annual internal radiation dose to individual staff members performing radionuclide injection was estimated to be 0.01 mSv, which can be considered negligible in an estimation of total effective dose. Conclusions: This 1-year study showed that effective radiation doses to nuclear medicine department staff members were within permissible levels, and that the classification of radiation workers is unlikely to be necessary in a typical nuclear medicine department in Hong Kong. (J HK Coll Radiol 2002;5:24-28)

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