



Strategies to Prevent the Emergence of Radiation-Induced Malignancies

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DEAR EDITOR,

Radiations are categorized as ionizing radiation (viz., alpha particle, beta particles, neutrons, etc.) and nonionizing radiation (viz., infrared, microwaves, radio waves, etc.) based on their ability/inability to liberate electrons from atoms or molecules.^[1,2] Humans are generally exposed to both natural and man-made sources of radiation during the course of their lives.^[1,2] Although radiation has definitive applications in fields such as medicine, industry, and research, it remains a major cause of health concern if not properly used.^[1,3]

Multiple adverse consequences, such as acute events (such as skin burns and local radiation injuries); malignancy; congenital anomalies; and even death, have been reported in cases of exposure to radiations beyond the permissible limits.^[1-3] Furthermore, subsequent to a nuclear accident, a remarkable rise in the incidence of psychological distress and psychiatric conditions (such as posttraumatic stress disorder, anxiety disorders, depression, and alcohol abuse) have been observed among the survivors.^[4,5] However, attributes such as age at the time of exposure, type of radiation, radiation dose, exposure duration, and sensitivity of tissues/organs, eventually determine the extent of radiation-induced damage.^[1,6,7]

It has been observed that incidence of radiation-induced malignancy/complications is still on the rise in heterogeneous settings, because of the presentation of clinical symptoms after a long interval; poor awareness among general population about the sources or side effects of radiation; limited orientation of medical students about assessment of radiation exposure; the absence or poor quality of protective devices in industries; nonutilization of the protective equipments despite their availability; no uniformity in the replacement examination or regular health check-up; lack of

infrastructure to enable early diagnosis; and limited access to information about supportive care services.^[1,3,5]

To address the above-mentioned challenges and thus bring about a significant reduction in the incidence of radiation associated malignancy, there is a crucial need that policy makers should explore all possible sources of radiation exposure, and then develop interventions in coordination with different stakeholders.^[1,5] These strategies include promoting thorough risk assessment among the exposed persons;^[4] developing a model to establish a relationship between time since exposure/age at exposure to radiation-induced malignancy;^[7] advocating implementation of appropriate preventive strategies in the industries;^[3] sensitizing physicians, population, and health professionals about radiation-induced malignancies;^[3] developing guidelines to ensure standardized case management based on the exposed dose of radiation and patient-related variables;^[8] establishing a mechanism to ensure follow-up of at-risk populations to encourage early detection and prompt initiation of specific treatment;^[4,8] building a strategic plan to enable preparedness, evacuation and relocation of people at times of any nuclear accident;^[4,5] and fostering linkages with international organizations to strengthen the overall system.^[1]

In conclusion, both ionizing and nonionizing radiations have been attributed to the causation of multiple cancers. Thus, it is the responsibility of the policy makers and other stakeholders to work in collaboration to eventually reduce the contribution of radiation on the development of malignancies.

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