Online Exclusive Article

Predicting Radiotherapy-Related Clinical Toxicities in Cancer: A Literature Review

Claire O’Gorman, BSc, PGDip, RGN, Wojciech Sasiadek, MD, Suzanne Denieffe, MSc, BNS, RGN, RPN, RNT, PhD, and Martina Gooney, BSc, PhD

Assessment of patients receiving radiotherapy for cancer is essential, with the ability to identify those who may be more likely to experience radiotherapy-related side effects noted as an important issue for nurses. Body mass, age, and radiation dose may be predictive factors for the development of such side effects. This review considers these factors and how nurses can use this evidence to inform their care, with results indicating that the dose of radiation, the site treated, and body mass index are predictive of toxicities that may develop. Increased awareness of these predictive factors will aid nurses in identifying patients at greater risk of developing radiation-related side effects. This will assist in guiding nursing interventions, as well as enabling the individualization of patient education, by placing greater emphasis on preventive measures for patients who are more vulnerable to the development of radiation-related toxicities.

The extent of side effects experienced by patients is determined partly by their level of radiosensitivity. This inherent individual response leads to increased effects of radiotherapy on the body and the development of toxicities and side effects. Highlighting factors that may increase patients’ radiosensitivity would enable nurses to perform a more comprehensive assessment, tailor patient information requirements, and implement necessary interventions in a timely and efficient manner. For patients receiving radiotherapy for cancer, studies have shown that predictive factors of clinical radiosensitivity may include body mass index, age, and radiation dose. This review will examine these studies and critically appraise the evidence to consider how knowledge of these factors can guide clinical practice.