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.

Claire O’Gorman, BSc, PGDip, RGN, is a nursing doctoral student in the Department of Nursing at the Waterford Institute of Technology in Ireland; Wojciech Sasiadek, MD, is a consultant radiation oncologist at UPMC Whitfield Cancer Centre in Waterford; and Suzanne Denieffe, MSc, BNS, RGN, RPN, RNT, PhD, and Martina Gooney, BSc, PhD, are lecturers and researchers, both in the Department of Nursing at the Waterford Institute of Technology. The authors take full responsibility for the content of the article. Funding was provided through a grant by Health Service Executive. The content of this article has been reviewed by independent peer reviewers to ensure that it is balanced, objective, and free from commercial bias. No financial relationships relevant to the content of this article have been disclosed by the independent peer reviewers or editorial staff. O’Gorman can be reached at cogorman@wit.ie, with copy to editor at CJON Editor@ons.org. (Submitted July 2013. Revision submitted August 2013. Accepted for publication September 2, 2013.)

Key words: quality of life; radiation therapy

Digital Object Identifier:10.1188/14.CJON.E37-E44

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.

The full text of this article can be accessed at http://ons.metapress.com.