

Determinants of quality of life in patients with breast cancer undergoing external beam radiotherapy

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Quality of life (QoL) of patients with breast cancer is not dependent only on the presence of the disease, as there is such a multitude of social and clinical factors [1, 2]. However, data on the determinants of QoL in Polish breast cancer patients during the course of radiotherapy are scarce and based on custom-made questionnaires [3], rather than the EORTC QLQ-C30 or QLQ-BR23, which are the tools of choice for such patients [4, 5]. We evaluated breast cancer patients undergoing radiotherapy for treatment-related determinants of QoL and compared them with the intensity of depressive symptoms.

A total of 98 women with breast cancer during the standard course of external beam radiotherapy agreed to complete the validated Polish versions 3.0 of EORTC QLQ-C30, QLQ-BR23 (all global, functional and symptom scales) and – at the same time point – the Beck Depression Inventory (BDI) to evaluate the intensity of depressive symptoms. A control group of 127 healthy women referred to the mammography department for screening purposes was evaluated using the BDI.

Median age of the study group was 54 (25–75%: 46.7–60.5) years. Breast conserving therapy (BCT) had been performed in 50% of patients. In the breast cancer group, 65% of subjects had undergone some form of chemotherapy and 51% were undergoing hormone therapy. Cronbach's α values for QLQ-C30, QLQ-BR23 and BDI were 0.91, 0.81 and 0.83 respectively, confirming adequate test performance.

Median total radiation dose given to the patients was 34 Gy (25–75%: 18–42 Gy), and only affected intensity of nausea/vomiting and constipation subscales ($R = 0.25$, $p = 0.04$; $R = 0.27$, $p = 0.03$ respectively) of the QLQ-C30 functional scales. No statistically significant correlations were found between the total dose and QLQ-BR23 scales, but the early reactions (RTOG staged ≥ 2 [6]) significantly worsened arm symptom subscale score assessment in QLQ-BR23.

Hormonal therapy was not significantly correlated with any of those three questionnaires' subscores. Previously received chemotherapy impacted neither QLQ-C30 nor BDI results, but it was associated with body image (BRBI) and systemic therapy side effect scores (BRST) ($p = 0.02$ and $p = 0.005$). Type of surgical intervention before radiotherapy impacted the field of global health status, resulting in better overall QoL in

patients who had undergone BCT (58% (25–75%: 50–67) vs. 50% (25–75%: 42–58); $p = 0.0405$). BCT was also associated with lower reported intensity of breast symptoms ($p = 0.0338$) and better perception of future perspectives (BRFU; $p = 0.0328$). The level of depressive symptoms measured in controls was significantly lower than in cancer patients (median 5 (25–75%: 1–10) vs. 12 (25–75%: 6–17) points; $p < 0.0001$). BDI scores were correlated negatively and significantly with all functional scales of QLQ-C30 (Spearman's correlation coefficients ranging from -0.36 to -0.46 , all $p < 0.05$) and QLQ-BR23 subscales: BRBI and BRFU ($R = -0.47$ and -0.51 ; $p < 0.05$).

In conclusion, radiotherapy itself has a minor influence on QoL of breast cancer patients, although organ-specific complications may significantly impair physical functioning. Other forms of oncological treatment, such as the type of surgical procedure performed, have a much more profound impact on all fields of QoL. Intensity of depressive symptoms is an important determinant of QoL in cancer patients which mandates routine psychological evaluation.

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Conflict of interest

The authors declare no conflict of interest.

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