

Associations and effects of anthropometric and body composition parameters on cancer-related fatigue in breast cancer survivors during adjuvant endocrine therapy

B.M.M.R. Santos¹, I.D.D. Custódio¹, F.S.M. Nunes¹, M.T.M. Lima¹, K.P. de Carvalho¹, D. Santana¹, J.F. Chiaretto¹, P.P.L. Canto², B.J. Laird³, C.E. Paiva⁴ and Y.C. de P. Maia^{1,5}

¹Molecular Biology and Nutrition Research Group, School of Medicine, Federal University of Uberlandia, Uberlandia, Brazil,
²Department of Clinical Oncology, Clinic's Hospital, Federal University of Uberlandia, Uberlandia, Brazil,
³Edinburgh Cancer Research Centre, Institute of Genetics and Molecular Medicine, University of Edinburgh, Edinburgh, UK,
⁴Department of Clinical Oncology, Barretos Cancer Hospital, Sao Paulo, Brazil and
⁵Nutrition Course, School of Medicine, Federal University of Uberlandia, Uberlandia, Brazil.

The Aromatase Inhibitors (AI) are one of the adjuvant treatment options for postmenopausal breast cancer (BC) women with hormone receptor-positive (HR+) ⁽¹⁾. Their mechanism of action significantly reduces the plasma levels of estrogen and the depletion of this hormone causes adverse effects such as cancer-related fatigue (CRF) ⁽¹⁾. CRF is one of the most common adverse effects in cancer patients, which causes many physical, psychosocial, and economic consequences in BC survivors ⁽²⁾. Considering that the adipose tissue is a metabolically very active endocrine tissue, their influences on the inflammatory process are one of the mechanisms used to explain greater CRF in BC patients with obesity ³. Body mass index (BMI), sedentary lifestyle and nutritional deficiencies are some of risk factors associated with chronic inflammation and have potential to generate predictors of CRF ⁽³⁾. The aim of this study was to analyze the associations and effects of anthropometric and body composition parameters on CRF in BC survivors during adjuvant endocrine therapy.

This prospective study included 89 postmenopausal women diagnosed with HR+ early BC in adjuvant endocrine therapy with AI. The assessments were performed at three time points: T0, baseline; T1, intermediate follow-up period, 12 months after T0; and T2, final follow-up period, 24 months after T0. At each time point, anthropometric and body composition assessments were performed. The CRF was determined from the fatigue subscale of the Functional Assessment of Chronic Illness Therapy-fatigue (FACIT-F). Generalized Linear Model (GLZM) and Generalized Mixed Model (GMM) analysis were used to verify the impact of anthropometric and body composition measurement on FACIT-Fatigue score.

At baseline, 32 (36%) women presented CRF. The women with lower FACIT-Fatigue score presented higher body mass index (BMI) ($\beta = -0.637$, CI = -0.986 to -0.287 , $p < 0.001$), waist circumference (WC) ($\beta = -0.265$, CI = -0.427 to -0.103 , $p = 0.001$), waist-to-height ratio (WHtR) ($\beta = -41.972$, CI = -67.155 to -16.788 , $p = 0.001$) and body fat (Kg) ($\beta = -0.285$, CI = -0.526 to -0.045 , $p = 0.020$). In the longitudinal phase, the WC ($p = 0.001$) and conicity index ($p = 0.021$) had negative effect on CRF, and those women with a lower FACIT-Fatigue score presented WC > 80 cm and conicity index above the median (> 1.3). Considering the FACIT-Fatigue subgroups, we identified significant difference in relation the BMI ($p = 0.002$), WC ($p = 0.004$) and WHtR ($p = 0.002$), with women with CRF presenting worse scores.

The clinical relevance of CRF is highlighted, considering the consistent impact on several adverse effects often reported by women in AI use. In addition, it is important to note the negative effect of body adiposity on CRF. Strategies that comprise emotional support, physical exercise, and nutritional guidance need to be included in routine care of BC survivors during adjuvant endocrine therapy.

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