Assessment of metabolic health in women with breast cancer: a prospective cohort study

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Introduction

Women diagnosed with breast cancer exhibit an elevated risk of weight gain and metabolic dysfunctions, which are associated with a decline in overall and specific survival rates. Interdisciplinary assessment at the time of diagnosis can positively influence prognosis and survival. This study aimed to evaluate the impact of breast cancer diagnosis and treatment on the metabolic health and survival of women undergoing treatment for breast cancer.

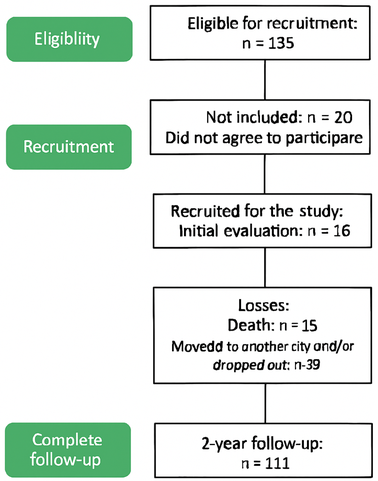


Figure 1. Study Follow-up Flowchart

Methods and Materials

This was a single-center, prospective cohort study that included women with a recent diagnosis of breast cancer, aged ≥ 40 years, without metastatic disease or established cardiovascular disease, who were followed for the first two years after breast cancer diagnosis. The criteria used for the assessment of metabolic health/dysfunction were the presence of obesity (body mass index, BMI ≥ 30kg/m²), hypertension (blood pressure, BP ≥ 130/85mmHg), hypertriglyceridemia (triglycerides, TG ≥ 150mg/dL), low high-density lipoprotein cholesterol (HDL < 50mg/dL), hyperglycemia (glucose > 100mg/dL), and the presence of metabolic syndrome (MetS, NCEP-ATPIII criteria). Clinical and anthropometric data (BP, BMI, and waist circumference/WC) were collected through interviews and physical examinations. Information on oncological treatments and tumor characteristics was extracted from medical records. Biochemical analyses included total cholesterol, HDL, LDL, TG, and glucose levels. Patients underwent interdisciplinary assessment (nutritional and psychological) at the time of diagnosis and continued with follow-up appointments with a breast specialist according to the service routine for 2 years. Assessments were conducted at five time points: initial consultation, and at six, 12, 18, and 24 months. Statistical analyses included non-parametric tests, logistic regression, and Kaplan-Meier survival analysis.

Results

A total of 165 women were eligible for the study, of whom 39 dropped out during follow-up. The analysis included 126 women with a mean age of 59.0 ± 12.0 years and a mean BMI of 29.7 ± 5.8 kg/m²; 91% of tumors were in stages I and II, 71% had negative axillary lymph nodes, and 79% were luminal subtypes. Over the 2-year follow-up period, among the indicators of metabolic dysfunction, a significant reduction was observed in the occurrence of women with dysglycemia (p=0.04), elevated systolic blood pressure (p<0.001), and reduced HDL levels (p=0.03). There was no significant difference in the occurrence of obesity (p=0.70), increased WC (p=0.09), hypertriglyceridemia (p=0.08), diastolic BP ≥ 85 mmHg (p=0.30), or the presence of MS, which was present in 45% of women at breast cancer diagnosis and in 42%, 37%, 36%, and 35% at six, 12, 18, and 24 months, respectively (p=0.40). Univariate logistic regression analyses did not demonstrate an impact of hormonal therapy, chemotherapy, or radiotherapy on the presence of metabolic dysfunctions (p>0.05). During follow-up, 15 patients died, and these patients had a higher prevalence of MS at initial assessment (73% versus 41% of survivors, p=0.020) and higher glucose levels (p=0.021) compared to survivors. The presence of MS was associated with lower survival (p=0.021), with a Hazard Ratio of 9.09 (95% CI: 1.73-47.9).

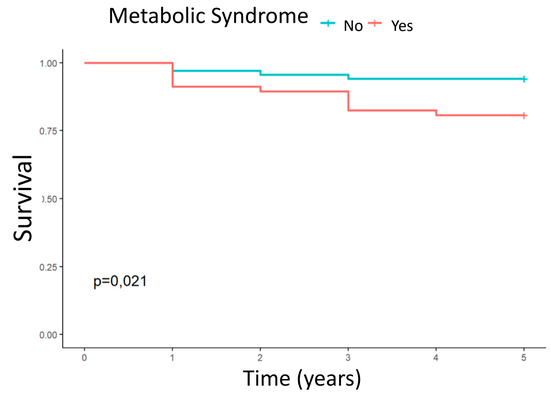


Figure 2. Kaplan-Meier Curve for Overall Survival in Breast Cancer Patients According to the Presence of Metabolic Syndrome (MS)

Conclusions

In women with breast cancer, interdisciplinary follow-up and healthy lifestyle recommendations had a positive impact on metabolic health, specifically on glycemia, HDL levels, and blood pressure, without altering the occurrence of obesity and MS. MS presented a high prevalence and was associated with lower survival.

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