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Editorial

Role of Obesity in Breast Cancer Metastasis and Relapse

Tejo Jayadi

Faculty of Medicine Universitas Kristen Duta Wacana

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Being overweight and obese are becoming major health problems for a lot of people because of the health consequence of non-communicable diseases such as cardiovascular diseases, diabetes, musculoskeletal disorder, and some cancer (such as endometrial, breast, ovarian, prostate, liver, gall bladder, kidney, and colon).[1] Obesity alters normal cellular and systemic homeostases, such as metabolic reprogramming, dysregulation of growth factor signalling, adipose tissue inflammation, and induction of angiogenesis. The alterations promote the development and/or progression of cancer by impacting the hallmarks of cancer, such as sustained proliferative signalling, cellular energetics, inflammation, angiogenesis, activating invasion, and metastasis.[2] In breast cancer, obesity is a determinant of progression and metastasis, through a complex cascade of six chronological steps, including local invasion, intravasation, survival in the circulation, arrest at distant organ sites and extravasation, micro-metastasis formation, and metastatic growth.[3] At the time of diagnosis, disseminated tumour cells (DTC) are already present, the cell is also referred to as a minimal residual disease (MRD). DTC can be detected in the bone marrow of nearly 40% of early-stage breast cancer patients. The breakup of their dormant state and readopt their proliferation under certain circumstances can finally lead to distant relapse and cancer-associated death. Age and overweight obesity are related to late relapses of breast cancer.[4] Women with a body mass index (BMI) > 40 kg/m^2 have a twofold increase in the risk of death from breast cancer and pre- or post-menopausal breast cancer, and excess adiposity is associated with a 30% increased risk of mortality.[5] Being underweight is an adverse independent prognostic factor for overall survival and progression-free survival in patients with metastatic breast cancer, while obesity and overweight appeared slightly protective.[6]

In this volume, the study about BMI and breast cancer conducted by Probowati et al., found that breast cancer-surviving patients with BMI ≥ 25 had slightly longer progression-free survival than BMI < 25, with a hazard ratio of 2 (CI 95% 0.457-2.491). The Kaplan Meier curve showed that the event was more frequent, and the cumulative survival was lower, but longer survival time in the breast cancer patients with BMI ≥ 25 patients compared to those with BMI < 25. In this study, the hazard ratio patients aged ≥ 50 years had a 3,44 times higher risk of breast cancer relapse than those aged < 50 years. Nevertheless, the *P* value of survival time with BMI and age were not analysed, so the study's null hypothesis could not certainly accept or reject, but the range risk of relapse after 5 years periods of an interview between two groups of BMI and PFS were explained.

Breast cancer survivors are expected to increase because of better early cancer detection and treatment. Although increased survival should be celebrated, there are common late effects of cancer and its treatment. Thus, better healthcare treatment

is needed to be delivered to the survivors to give them a better quality of life.[7,8]

REFERENCES

1. Obesity and overweight [Internet]. [cited 2022 Dec 6]. Available from: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

2. Smith LA, O'flanagan CH, Bowers LW, Allott EH, Hursting SD. Translating Mechanism-Based Strategies to Break the ObesityÀCancer Link: A Narrative Review. J Acad Nutr Diet [Internet]. 2018 [cited 2022 Dec 6];118:652–67. Available from: https://doi.org/10.1016/j.jand.2017.08.112

3. Barone I, Giordano C, Bonofiglio D, Andò S, Catalano S. The weight of obesity in breast cancer progression and metastasis: Clinical and molecular perspectives. 2020 [cited 2022 Dec 6]; Available from: https://doi.org/10.1016/j.semcancer.2019.09.001

4. Werner S, Heidrich I, Pantel K. Clinical management and biology of tumor dormancy in breast cancer. Semin Cancer Biol [Internet]. 2022 [cited 2022 Dec 7];78:49–62. Available from: https://doi.org/10.1016/j.semcancer.2021.02.001

5. Patterson RE, Rock CL, Kerr J, Natarajan L, Marshall SJ, Pakiz B, et al. Metabolism and Breast Cancer Risk: Frontiers in Research and Practice OVERWEIGHT/OBESITY AND BREAST CANCER: PROPOSED MECHANISMS Keywords Obesity Diet Physical activity Metabolism Breast cancer. JAND [Internet]. 2013 [cited 2022 Dec 7];113:288–96. Available from: http://grants.nih.gov/grants/

6. Saleh K, Carton M, Eronique Dieras V, Heudel P-E, Brain E, Eronique D'hondt V, et al. Impact of body mass index on overall survival in patients with metastatic breast cancer. 2020 [cited 2022 Dec 7]; Available from: https://doi.org/10.1016/j.breast.2020.11.014

7. Robien K, Demark-Wahnefried W, Rock CL. Evidence-Based Nutrition Guidelines for Cancer Survivors: Current Guidelines, Knowledge Gaps, and Future Research Directions. YJADA [Internet]. 2011 [cited 2022 Dec 8];111:368–75. Available from: www.aicr.org

8. Keaver L, Mcgough AM, Du M, Chang W, Chomitz V, Allen JD, et al. Self-Reported Changes and Perceived Barriers to Healthy Eating and Physical Activity among Global Breast Cancer Survivors: Results from an Exploratory Online Novel Survey A. J Acad Nutr Diet [Internet]. 2021 [cited 2022 Dec 8];121(2):233–41. Available from: www.jandonline.org2212-2672/