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Regional variation in therapy use and survival outcomes in patients with de novo HER2+ metastatic breast cancer in the Netherlands in 2013-2023: A population-based cohort studyN. Ding¹, S. Geurts¹, K. Hermans¹, I. Vriens¹, L. Kooreman², N. Peters³, E. Heuts⁴, J. Verloop⁵, A. Voogd⁶, V. Tjan-Heijnen¹

¹ Department of Oncology, Maastricht University Medical Center (MUMC), Maastricht, Netherlands, ² Department of Pathology, Maastricht University Medical Center (MUMC), Maastricht, Netherlands, ³ Department of Internal Medicine, St Jans Gasthuis, Weert, Netherlands, ⁴ Department of Surgery, Maastricht University Medical Center (MUMC), Maastricht, Netherlands, ⁵ Department of Research and Development, IKNL - Netherlands Comprehensive Cancer Organisation, Utrecht, Netherlands ⁶ Department of Epidemiology, Maastricht University, Maastricht, Netherlands

Background

This study aimed to describe regional differences in systemic treatment and overall survival (OS) in patients with *de Novo* HER2+ metastatic breast cancer (MBC) in the Netherlands in 2013-2023.

Methods

Patients were identified from the Netherlands Cancer Registry. Patient and tumour characteristics, first-given systemic therapy, and local therapy were compared across seven Dutch regions (A-G). Socioeconomic status (SES) was based on median disposable household income per postal code area, grouped into low/middle/high. OS was estimated using Kaplan-Meier methodology. The multivariable Cox proportional hazards model, adjusted for baseline characteristics, systemic therapy, and surgery of the primary tumour, was used to compare OS between regions.

Results

Among 1,959 systemically treated patients, regional differences were observed in age, SES, and tumour grade. Also use of HER2-targeted therapy (80%-94%, $p < 0.001$), chemotherapy without HER2-targeted therapy (1%-5%, $p = 0.07$), and endocrine therapy without HER2-targeted therapy (5%-16%, $p < 0.001$) differed. Among HER2-targeted users, pertuzumab use ranged from 74%-79% ($p = 0.88$). The median follow-up time was 57.0 months (interquartile range: 29.2-89.0). Median OS varied by region (43.9-82.8 months, $p = 0.03$). After multivariable adjustment, regional OS differences were however not statistically significant anymore, with HRs differing from 0.79 to 1.01. Independent OS predictors included: age (50-74 vs. < 50 : HR=1.70; ≥ 75 vs. < 50 : HR=3.15), SES (low vs. high: HR=1.30), grade (3 vs. 1-2: HR=1.28), hormone receptor status (positive vs. negative: HR=1.32), number of organs involved (multiple vs. single: HR=2.04), metastatic site (soft tissue vs. bone-only: HR=0.63; central nervous system vs. bone-only: HR=2.48), systemic therapy (chemotherapy vs. HER2-targeted therapy: HR=2.49; endocrine vs. HER2-targeted therapy: HR=2.14), and surgery of the primary tumour (no vs. yes: HR=2.12).

Conclusions

Regional differences in treatment patterns, especially HER2-targeted therapy, were observed in the Netherlands, but this did not lead to OS differences after adjustment.

Legal entity responsible for the study

Maastricht University Medical Center (MUMC+).

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Disclosure

All authors have declared no conflicts of interest.