

Factors associated with the uptake of biosimilar for breast cancer treatment

from the perspectives of physicians and patients-Evidence from China

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Abstract

The objective of this study is to investigate the factors associated with treatment of breast cancer with biosimilars from the perspectives of physicians and patients, and to generate evidence for promoting the uptake of biosimilars. This study targeted trastuzumab and its indicated human epidermal growth factor receptor 2 (HER2) positive breast cancer, and included female HER2 positive breast cancer patients under treatment of trastuzumab at a provincial oncology medical center in southern China from January 1, 2021, to December 31, 2021. The study extracted patients' demographic, socioeconomic and clinical information and the basic information of their attending physicians from the hospital information system. We performed a bivariate multiple logistic regression analysis of factors predictive of the use of trastuzumab biosimilar. A total of 446 patients (ranged between 26 and 74, 51.4 ± 9.06) were included in the analysis. 19.1% of them chose biosimilar trastuzumab, of which 6 were switched from reference trastuzumab. Older patients, patients initiated treatment after January 2021 when biosimilar of trastuzumab entered clinical use compared with those initiated treatment before January 2021, patients enrolled in the urban and rural resident health insurance program compared with those enrolled in the urban employee health insurance program, patients with younger attending physicians, with male attending physicians compared with female attending physicians, and with chief physicians compared with deputy chief physicians were more likely to adopt biosimilar trastuzumab for treatment ($P < 0.05$). Controlling the other factors unchanged, when patient's attending physician was deputy chief physician, increasing 1 year age of patient was associated with increased probability of adopting biosimilar trastuzumab by 0.8% ($dy/dx = 0.008$, 95% CI: 0.002~0.01, $P = 0.01$). When patient was aged between 26 and 60, the probability to adopt biosimilar trastuzumab for patient whose attending physician was chief physician was higher than those whose attending physician was deputy chief physician. When patient was at the age of 45, the gap of the probability to adopt biosimilar trastuzumab was the largest. The probability to adopt biosimilar trastuzumab for patient whose attending physician was chief physician was 20% higher than those whose attending physician was deputy chief physician ($dy/dx = 0.20$, 95% CI: 0.13-0.27, $P < 0.01$). To conclude, we find that disclosure of clinical data of biosimilar to the public and making recommendation to the indicated

patient at the initiation stage of treatment are helpful to avoid reduced willingness of switching to biosimilar due to non-clinical reasons. Patients with lower ability-to-pay gain more economically from uptake of biosimilar. Official guidelines and professional training are critical to enhance physicians' willingness and confidence of adoption of biosimilar.

Key words Biosimilar; Uptake; Breast cancer; Physician; Patient