Editorial

Unveiling breast cancer disparities: comparative insights from Asian and Western populations

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Epidemiological differences

A study presented at the 2024 American Society of Clinical Oncology (ASCO) Annual Meeting revealed that non-Hispanic white women in the United States had the highest age-standardized incidence rate of breast cancer at 190.4 cases per 100,000 (1). In contrast, the latest GLOBOCAN 2022 data indicates that Asia's age-standardized incidence rate was significantly lower at 34.3 cases per 100,000 (2). However, the incidence of breast cancer in Asia is on the rise. An analysis of 49 Asian countries showed an increase in the age-standardized incidence of breast cancer from 21.2 in 1990 to 35.9 in 2019 per 100,000 (3). On the other hand, the mean age of onset and peak age for breast cancer in Asian women are earlier than those in Western countries (4). The proportion of breast cancer patients under 50 in East Asia is as high as 40%, compared to only 20% in Western countries. This discrepancy may be attributed to unique biology characteristics of breast cancer in Asia, along with the interplay of fertility patterns, lifestyle, and genetic factors (5).

Differences in clinicopathological features

Asian and Western populations exhibit distinct clinicopathological features in breast cancer. For instance, the incidence of human epidermal growth factor receptor 2 (HER2)-positive breast cancer is higher in Asian women at 18.7% compared to 13.8% in white women (6). Molecular analyses suggest that Asian women with breast cancer are more likely to have HER2-enriched tumors and a higher frequency of *TP53* mutations in hormone receptor (HR) positive breast cancer (7). In terms of immune profiles, Asian breast cancers generally have higher immune related scores, hinting at a potential better response to immunotherapy (7). Additionally, breast density is generally higher in Asian women than in Caucasian women, particularly premenopausal, with a 2.0% higher density and 5.7 cm^3 higher in dense premenopausal volumes, which may impact the effectiveness of early breast cancer screening (8).

Treatment choices and prognostic differences

Surgical selection varies geographically, with breast-conserving surgery being more common in Europe and the United States. A study presented at the 2024 ASCO Annual Meeting revealed that 74.2% of breast cancer patients in the United States opted for breast-conserving surgery after neoadjuvant chemotherapy, while mastectomy was chosen by only 25.8% (9). However, a study conducted in northwest China showed that mastectomy was the choice for 79.1% of patients after neo-adjuvant chemotherpay (NAC), with only 20.9% receiving breast-conserving surgery (10). Breast reconstruction surgery also shows significant regional differences, with Europe and the United States having higher rates of application (11). Cultural beliefs significantly impact the acceptance of reconstructive surgery in Asian women; for example, Malaysian women prefer autologous

tissue reconstruction, while Chinese women have lower reconstruction rates (12).

Asians may response to curtain treatment differently than their western counterparts. For instance, Asian population demonstrated a better response to ribociclib/abemaciclib compared to the intention-to-treat (ITT) populations, indicated by higher objective response rates (ORRs) and disease control rates. In the meantime, Asian population experienced a higher incidence of neutropenia when using these agents. These differences are possibly due to biological characteristics and drug metabolism differences in Asian populations.

Several prognosis studies have indicated that Asian breast cancer patients have a better overall prognosis than their European and American counterparts (13). A study presented at the 17th American Association for Cancer Research (AACR) Scientific Meeting on Cancer Health Disparities in Racial/Ethnic Minorities revealed that Asian women had significantly higher breast cancer survival rates than non-Latino white women, particularly among Japanese, South Asian, and Chinese women.

Cross-cultural perspective

In Asian culture, families play a more significant role in healthcare decision-making. A study comparing Chinese and non-Hispanic white breast cancer survivors found that 61% of physicians perceived the absence of caregivers as "very unfavorable", highlighting the importance of family involvement in medical decision-making in Chinese culture (14). In contrast, Western cultures place a greater emphasis on the personal autonomy of patients (15). Chinese physicians may focus more on the technical details and treatment options of the disease, paying less attention to psychosocial issues, while Western physicians may prioritize comprehensive patient care, including psychosocial support and quality of life considerations (16,17).

Development of Chinese Society of Clinical Oncology-Breast Cancer (CSCO-BC) guideline: considering the unique characteristics of breast cancer in China

Differences in formulating guideline

The formulation of CSCO-BC guideline is based on evidence-based clinical trial, the availability of diagnostic and therapeutic drugs, and the latest progress in medicine. The recommendations are stratified into three levels based on the evidence level and consensus (18). The specific grading always considers the actual situation in China, including the accessibility of medical resources and economic factors. In contrast, international guidelines such as ASCO guidelines are mainly focused on randomized controlled trials (RCTs) and systematic reviews, with less consideration of resource constraints (19).

Differences in treatment recommendations

The CSCO-BC guidelines have transitioned from recommending based on treatment line to precise stratification, emphasizing the response to prior treatment, thereby maximizing patient benefits (20). A study led by CSCO, presented at this year's annual meetings of the AACR, showed that the usage rate of trastuzumab in China has been higher than that in the United States since 2017. Additionally, the proportion of neoadjuvant therapy has doubled. These developments are attributed to healthcare insurance reforms and the adoption of guidelines in China (21).

Current situation and progress of innovative drug research and development in China

The rapid development of innovative drugs in China reflects the in-depth consideration and adaptation to the characteristics of the Asian population (22). The increase in the number of breast cancer clinical trials and positive research and development of new drugs in China, especially the emergence of targeted treatment and new chemotherapy drugs, provide more treatment options.

For example, the phase III RCT BG01-1323L showed that utidelone plus capecitabine significantly improved progression-free survival (PFS) and ORR compared with capecitabine alone in heavily pretreated patients with metastatic breast cancer (23). Pyrotinib also showed excellent efficacy in HER2+ breast cancer in both first and later lines (24). Dalpiciclib combined with endocrine therapy significantly prolonged PFS in patients with HR^+/$HER2^-$ advanced breast cancer (25). The TORCHLIGHT study represents the first phase III registration trial in China that achieved positive results in the field of immunotherapy for advanced triple-negative breast cancer (TNBC). This landmark study deputed at the 2023 ASCO Annual Meeting. The study demonstrated that toripalimab plus nab-paclitaxel significantly prolonged PFS in metastatic or recurrent TNBC, compared to nab-paclitaxel alone (26).

Figure 1 Representative picture of the CSCO-BC academic speaker tour (visiting NCCS). CSCO-BC, Chinese Society of Clinical Oncology-Breast Cancer; NCCS, National Cancer Centre Singapore.

In addition, metronomic chemotherapy, as a low-dose, high-frequency therapy, reduces the toxicity and maintains sustained anti-cancer effects, which makes it particularly suitable for Asian patients.

Nowadays, China is actively participating in international clinical trials of breast cancer and promoting the development of breast cancer treatment together with global collaborators.

"Chinese treatment regimens" towards global: CSCO-BC guideline lecture tour

Currently, the widely adopted breast cancer guidelines of diagnosis and treatment are mainly based on the research data in Western populations, and its applicability in Asian populations has always been a concern in the academic community. To discuss the differences of breast cancer between Asian and Western populations and develop the most suitable treatment strategy, the CSCO-BC academic committee commenced a global lecture tour of CSCO-BC guideline recently. The tour covered multiple countries and regions in Southeast Asia, and the expert team visited several advanced medical centers such as Phraongkutklao Hospital in Thailand, University of Malaya Medical Center, Picaso Hospital in Malaysia, and National Cancer Centre Singapore (NCCS). During the tour, Professor Shusen Wang, the chief expert of internal medicine in breast cancer of Sun Yat-sen University Cancer Center, and Professor Kun Wang, the vice president of Guangdong Provincial People's Hospital Cancer Hospital, shared topics on "Current Situation and Innovative Drug Research and Development of Breast Cancer in China" and "The Overview of CSCO-BC Guideline", respectively. It successfully disseminated CSCO's advanced concepts of breast cancer, and earned acclaim and recognition from Southeast Asian peers. Furthermore, it highlighted the necessity of regional collaboration for developing the most suitable treatment for breast cancer among Asian population (*Figure 1*).

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