Past, present and future of HER2+ breast cancer treatment

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Cancer treatment has evolved significantly with the introduction of biologic agents, especially in the breast cancer (BC) area. In the landmark trial by Slamon and colleagues, trastuzumab added to standard chemotherapy for metastatic disease significantly improved overall survival (OS) by approximately 5 months. Since then, trastuzumab has been shown to confer a survival benefit in multiple settings, including adjuvant and neoadjuvant treatment of her2-positive breast cancer, and her2+ metastatic gastric cancer. Trastuzumab is now well-established in guidelines as a standard of care, but it remains costly: estimates place the cost reaching at least US$70,000 for 1 year of therapy in the US. Often, financial factors, including reimbursement, out-of-pocket costs, and administrative factors are barriers to patient access for this recommended treatment. In developing countries, fewer than 10% of patients have access to her2- targeted therapies, largely because of the cost.

Despite of trastuzumab greatly improved the prognosis and outcomes of patients with HER2-positive breast cancer, management remains challenging in the post-trastuzumab era. Additional anti- HER2 treatments, such as pertuzumab and trastuzumab emtansine (T-DM1) have greatly advanced the treatment of this disease. Median overall survival (OS) is now approximately 5 years, and a significant proportion of patients are alive at 8 years. Emerging therapies like trastuzumab Deruxtecan (T-DXd), Margetuximab, combination of trastuzumab and novel HER2 targeted therapies all have shown improved outcome.

Although the efficacy of biologics and novel agents is undeniable, their expense is a significant contributor to the increasing cost of cancer care. Across disease sites and indications, biosimilar agents are rapidly being developed with the goal of offering cost-effective alternatives to biologics.

In recent years, the development of biosimilar medications for trastuzumab, and other similar biological medications has provided an opportunity for expanded patient utilization of these treatments at a potentially lower cost than the original drug. With increased usage of biosimilar medications, some estimates predict potential cost savings of approximately US$54 billion over 10 years, largely based on data observed with biosimilar immunomodulatory medications. Trastuzumab biosimilar has been proved to alter cost-effectiveness of target therapy combination use and improve patient access from payer’s perspective. In conclusion, biosimilar can reduce the overall cost for breast cancer care and potentially improve access to emerging novel therapies for all breast cancer patients.