Focused issue "Neoadjuvant/adjuvant treatment for early breast cancer"

The prognosis of primary breast cancer has improved over time. The reason for the improvement of patients' prognosis has been greatly contributed by advances in standard treatment as well as the widespread use of mammography screening for breast cancer. The goal of adjuvant systemic treatment for primary breast cancer is to control micrometastases that cannot be detected before the start of initial treatment such as surgery and neoadjuvant systemic treatment for primary tumor, thereby reducing recurrence and consequently prolonging survival. Adjuvant systemic treatment also plays a major role in suppressing local recurrence as well as distant metastases.

Adjuvant systemic treatment includes endocrine therapy, chemotherapy, and anti-HER2 therapy. Treatment strategy differs for each tumor subtype such as luminal A-like, luminal B like, HER2-positive and triple negative subtype that defines treatment responsiveness. Furthermore, selection of adjuvant treatment is made in consideration of the risk of recurrence. Recently, methods of more appropriate treatment selection have become available beyond immunohistochemistry-based subtype classification. Adjuvant chemotherapy for hormone receptor-positive/HER2-negative early breast cancer can be selected based on prognosis prediction by gene-expression profiles such as Onccotype Dx®, MammaPrint®, Prosigna® and Curebest™ 95GC Breast. Recently, new therapeutic agents such as immune check point inhibitors, PARP inhibitors and CDK4/6 inhibitors have also been tested in the neoadjuvant/adjuvant setting. Some of these inhibitors will have clinical applications in the near future.

Neoadjuvant systemic treatment for operable breast cancer has the following purposes in addition to the improvement of prognosis by the above-mentioned adjuvant systemic therapy: Improvement of surgical outcome associated with tumor shrinkage, prediction of prognosis based on treatment response or clinicopathological characteristics in residual tumors, and evaluating new drugs early. Recently, the CREATE-X and KATHERINE trials have shown that residual disease-guided therapy after neoadjuvant systemic treatment is a valid therapeutic strategy that can further improve the prognosis of early breast cancer.

Improvement of prognosis by neoadjuvant/adjuvant systemic treatment is not only due to the development of new drugs such as molecular targeted therapy, but also due to improvement of treatment schedule, appropriate patients' selection and advances in supportive care. In particular, progress in supportive care for the short-term side effects associated with chemotherapy is remarkable. Prophylactic continuous G-CSF for febrile neutropenia and antiemetics such as aprepitant for nausea and vomiting are representative cases of significantly reduced chemotherapy-related adverse events. On the other hand, treatment and prophylaxis for chemotherapy-induced hair loss and sensory peripheral neuropathy are still inadequate. Although cooling caps or frozen gloves have shown prophylactic effects, they require special devices and laborious process. Prevention and treatment/care for factors affecting cancer survivorship, such as sexual dysfunction and fertility, cardiotoxicity, secondary carcinogenesis, anxiety about recurrence, lymphedema, changes in body image, and chemo-brain, also need to be improved.

It requires further studies to answer how intense and how long (neo)adjuvant treatment should be given in individual patients. Escalation of adjuvant chemotherapy does not seem successful except for residual disease-guided therapy. De-escalation of anti-HER2 therapy may be useful for a certain patient population. More attention needs to be paid to how long adjuvant endocrine therapy should be given in each patient. Not only clinical trials but also development of biomarkers and further understanding of biological features of breast cancer are needed to answer these questions.

This focused issue comprises comprehensive and informative review articles which cover virtually all aspects of current status and perspective in management for early breast cancer. We believe that this focused issue is very useful and informative to readers of the "*Chinese Clinical Oncology*". Last but not least, we would like to express our cordial gratitude to all contributing authors, reviewers and the editorial office for this focused issue.

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