

Predicting response to neoadjuvant chemotherapy in breast cancer

Researchers determine the efficacy of popular treatment method

A team of Malaysian researchers has found that neoadjuvant chemotherapy is a reasonable treatment option for localized (hormones negative and HER2 positive) breast cancer and further demonstrating its utility in downstaging primary breast tumor, according to a study published in the recent issue of the journal *Advances in Modern Oncology Research* (AMOR).

Breast cancer is the most common malignancy in women; it kills about half a million women each year worldwide, according to the World Health Organization. In low- and middle-income countries, women are increasingly diagnosed with the disease. This could be attributed to longer life expectancy and accelerated urbanization. In Malaysia, one in 19 women is at risk of getting breast cancer, which comprises 31% of all cancers affecting women, National Population and Family Development Board chairwoman Datuk Mariam Mas Jacob recently said.

Neoadjuvant chemotherapy (NAC) is a systemic therapy given with the dual goals of improving survival and facilitating local treatments such as surgery or radiation therapy in patients. Pre-surgical neoadjuvant chemotherapy has been a standard of care in patients with locally advanced breast cancer, whereby it is administered prior to surgery to improve breast conservation rate by reducing tumor size.

Apart from the potential clinical gains that are achieved by downstaging, neoadjuvant chemotherapy also provides an *in vivo* evaluation of chemosensitivity to specific agents, as well as assessment of tumor response and potential need for postoperative therapy; which is of particular value for accelerating new drug development. For example, a Neo-tAnGo trial conducted in 2013, indicated that women with invasive cancer in the breast and axillary lymph nodes given neoadjuvant taxane before anthracycline chemotherapy may be more likely to acquire a pathologic

complete response (PCR) than those who received taxane treatment after.

In many instances, neoadjuvant therapy can be beneficial to the patients with chemoresponsive breast cancers. Interestingly, a study in 2012 have demonstrated that the triple-negative breast cancer (TNBC) and human epidermal growth factor receptor (HER2)-positive breast cancer are the most chemosensitive, and therefore are the most susceptible to neoadjuvant chemotherapy.

Lead author and consultant breast surgeon Dato' Dr. Cheng-Har Yip, along with co-researchers from Subang Jaya Medical Centre, Malaysia, accessed 1,183 women with breast cancer surgery (either lumpectomy or mastectomy), of whom 80 patients were treated with NAC prior surgery. The association of variables such as patients' age, ethnicity, tumor size, stage, grade, pathologic complete response and "predictive" tumor marker (hormone and HER2 receptors) were evaluated between two groups: patients who underwent surgery or neoadjuvant chemotherapy prior surgery.

In this study, the breast conservation rates between two groups were comparable. Examination of the 80 patients who underwent neoadjuvant chemotherapy showed that pathologic complete response rate was not significantly affected by age, grade and subtypes of tumor. "Neoadjuvant chemotherapy is able to downsize tumour to achieve breast conservation rate that is similar to those without neoadjuvant chemotherapy," they wrote. Intriguingly, there was a tendency for pathologic complete response to be higher in hormones negative, HER2 positive and triple negative breast cancer tumors, according to the researchers.

The research article was reported by Dato' Dr. Cheng-Har Yip, Mastura Yusof, Matin Mellor Abdullah, Yoke-Ching Foo, Beng-Khiong Yap, *et al.* The research article is published in this issue of AMOR (page 59) and can be downloaded online at www.advmodoncolres.com.