Breast cancer management: the way forward

Biopsy for breast diseases has been widely used for diagnosis. Various techniques including fine-needle aspiration, core biopsy, ultrasound-guided biopsy, needle localisation excisional biopsy, suction-assisted large core–needle biopsy, and open surgical biopsy have been adopted into local clinical practice. Local data on selecting patients who fulfilled the criteria for a particular type of biopsy application have been presented by Tsang et al[1] with a high success rate and a comparable cancer diagnostic rate to that reported overseas. Further investigations on the use of various techniques on the accuracy of diagnosis, rate of complications, psychological distress to patients, as well as cosmetic deformity are warranted. The article by Wong et al[2] in this issue of the *Hong Kong Medical Journal* also presents the retrospective data on ultrasonography-guided breast biopsy using a modified coaxial technique in a local institution. The local experience is important for future development of biopsy guidelines, particularly for Chinese populations, as it takes account of physical and sociocultural differences between Asians and Westerners. Whether ultrasound-guided diagnostic biopsy is more sensitive and specific for Chinese women with dense breasts remains a question to explore. Recently, vacuum-assisted biopsy (VAB) was tested for management of breast lesions,[3] but in any case the choice of VAB techniques should basically hinge on the characteristics and site of the breast tumour as well as on patient characteristics. Close collaboration between surgeons and radiologists is essential to select an appropriate biopsy technique so as to maximise diagnostic and cosmetic outcomes. As an initial step in breast disease management, its main goal is to differentiate malignant from benign lesions by a minimally invasive procedure, so as to produce the least cosmetic deformity. Further prospective study is therefore necessary to develop a diagnostic paradigm specially for Chinese women.

Breast cancer management relies not merely on the provision of treatment. Early detection of abnormal breast tissue, precise histopathologic assessment, and accurate diagnosis are important gatekeeping functions for breast health care. In recent years, better understanding of the molecular biology of breast cancer has brought significant improvements in molecular pathology and imaging.[4,5] Accurate staging of the disease is crucial for subsequent breast cancer management, including the provision of treatment and follow-up investigations. Recent new technologies for radiological assessment (sentinel lymph node mapping, bone scintigraphy, magnetic resonance imaging, positron emission mammography and other sonographic techniques) have greatly improved the accuracy of diagnosis and staging. They definitely save resources and reduce unnecessary clinical procedures. Nevertheless, mammography with moderate sensitivity and specificity is still the primary imaging modality for breast cancer detection and diagnosis, given that it reduces breast cancer mortality.[6] Its application to screening for breast cancer still remains controversial among Chinese women, due to anatomical differences between Asians and Westerners and limitation of resources.[7] To date, mammography and breast biopsy are still the gold standard for breast cancer screening and diagnosis. Notwithstanding the well-accepted standard, the question on where and which modality of screening for breast cancer should be further developed for Asians remains unanswered. More research on the feasibility of breast screening programmings using different modalities is necessary for the Chinese population. Early detection is still a key to better recovery.

Following the application of various diagnostic techniques, systemic treatment for breast cancer management has been evolving rapidly owing to advances in biomedical research. Apart from standard treatment modalities (chemotherapy, hormonal therapy, radiotherapy, and surgery), targeted therapy has now revolutionised the treatment for breast cancer. As medical engineering develops at an amazing pace, tumour biopsy and imaging techniques have improved significantly in terms of accuracy and safety. However, there is still a long way to paving a road for personalised medical care. Many barriers to optimal breast health care still have to be overcome, and such care must extend from the initial diagnosis to final decisions on the dose and schedule of treatment options.

In the realm of genetics in oncology, there are numerous genes that appear to vary in their level of expression among different individuals and ethnicities and are viewed as crucial to the revolution in cancer research.[8] As an example, chemotherapy is no longer approached from the perspective of 'one size fits all'. The dosage and schedule might vary among different groups due to differences in toxicity profiles. Racial disparity is deemed to be one contributing factor for such variation.[9,10] With the advancement of molecular biology, breast cancer is further classified into several subtypes, which are associated with significant differences in relapse-free and overall survival,[11,12] as well as treatment efficacy. Such differences all influence the selection of management strategies.[13] For instance, hormone-sensitive breast cancer patients appear to

receive fewer benefits from chemotherapy than their hormone-insensitive counterparts.[14] It is anticipated that breast cancer treatment will not rely solely on chemotherapy and its use might become more population-specific. The novel molecular classification of breast cancer not only changes the use of traditional chemotherapy, but also contributes to differences in local treatments. Local recurrence rates vary among breast cancer subtypes classified according to gene expression profiling.[15] The risk of recurrence is not clear-cut and a consensus for treatment has not yet been accorded to the new molecular classification. Nevertheless, based on the novel risk stratification, the management of breast cancer (involving surgery for the primary tumour, radiotherapy for local control, and subsequent adjuvant treatments) is expected to become more refined. Guidelines for personalised treatment may be set up to replace existing 'less specific' treatment strategies.

Personalised medicine is also the goal of breast cancer management. To make assessment and treatment specific to an individual patient or a representative population, a new research methodology is necessary to decipher codes of breast cancer, from tumour formation to tumour progression. Bench-to-bedside (translational) research is the key to refining diagnosis, predicting treatment effectiveness, and determining disease prognosis.[16] An individualised treatment plan could then be offered to a newly diagnosed breast cancer patient, instead of traditional standard treatment entailing surgery, radiotherapy, and/or adjuvant therapy. In parallel with the development of translational research, breast cancer screening has to undergo further development to allow earlier detection of malignancy, before there are clinical symptoms. Given that risk characterisation is unclear and the ideal screening modality is not well-established for Chinese women, fully developed comprehensive breast cancer screening in the community is still a long way off. However, this goal is especially important in Asia, because the incidence of breast cancer is increasing, the patients are younger, and their tumours are bigger at the time of presentation.

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