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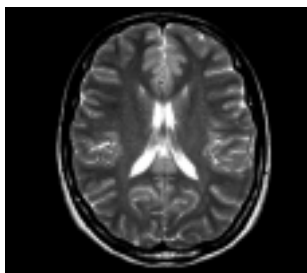
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Axial T2-weighted MR image of the brain in an epileptic patient on dilantin shows a focal hyperintense lesion in the centre of the SCC, which also showed restricted diffusion.
 (Refer to pages 726-730)

The trend towards a conservative approach in the surgical management of breast cancer

S C Low

It is common knowledge that breast cancer affects large numbers of women worldwide. In Singapore, the incidence rate has doubled over a 20-year period⁽¹⁾ and a similar trend has been observed in other parts of Asia, reflecting the impact of urbanisation and changes in lifestyle on breast cancer risk. Though incidence rates in the East are still markedly lower than those in the West, the risk factors involved are similar. In this issue of the Singapore Medical Journal (SMJ), a hospital-based study from Kelantan, Malaysia, Norsa'adah et al found family history, nulliparity, body weight and oral contraceptive use to be independent risk factors for breast cancer⁽²⁾.

The surgical management of breast cancer has always followed a conservative trend, in keeping with the essential surgical principle of avoidance of unnecessary surgery. In the area of diagnosis, the challenge has been to accurately distinguish benign from malignant conditions, if possible, without the need for open surgical procedures. This is particularly important in breast screening which involves large numbers of asymptomatic women, where benign screen-detected lesions vastly outnumber cancers. Indeed, a low benign-to-malignant biopsy ratio is an essential quality assurance indicator in breast screening programmes. The same approach has also been applied to symptomatic breast lesions, as the majority of benign breast lesions such as fibroadenomata, and those associated with fibrocystic change, are self-limiting. Refinements in breast imaging, and the development of various forms of needle biopsies have made it feasible to safely exclude cancer without the need for open excision. Fine-needle aspiration cytology (FNAC) is the least invasive needle biopsy, and can be highly sensitive for cancer when used in combination with clinical and mammographical findings, also known as the "triple test"^(3,4). The article by Chaiwun et al⁽⁵⁾ in this issue of the SMJ addresses the value of equivocal FNAC results in distinguishing benign lesions from cancers and shows that accuracy is improved by factoring in mammographical findings.

Definitive surgery for breast cancer has similarly taken a conservative course. Modern surgical treatment began in the 1890s with the introduction of the Halstead radical mastectomy, which became the gold standard operation for most of the 20th century. The radical mastectomy provided good local control but did not prevent systemic recurrence in a significant percentage of patients. In response, extended radical mastectomies were introduced but these were abandoned when it became clear that overall survival was not improved by more extensive resection. With the recognition that cure from surgery alone was limited because of systemic dissemination prior to surgery, the purpose of surgical treatment became one of achieving local control rather than

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cure, though local control is a pre-requisite for cure. The conservative boundaries of curative surgery were first explored with pectoralis muscle-sparing modified radical mastectomy, the earliest of which was introduced in the 1930s by Patey. Variations of this procedure were described, which had in common, preservation of the pectoralis major, resulting in less deformity and shoulder weakness. After evidence from two randomised trials^(6,7) in the early 1980s showed no compromise in local control and overall survival, modified radical mastectomy was accepted as a standard procedure and it remains in use today.

With the successful adoption of a less radical mastectomy, the development of curative breast conserving surgery (BCS) was an obvious and important next step forward. Though trials on BCS began as early as the 1960s, difficulties were encountered. Suboptimal treatment was met with unacceptable levels of local recurrence which sometimes resulted in poorer overall survival⁽⁸⁾. Acceptance of BCS as an alternative to mastectomy came only in the early 1990s, after a number of later randomised studies showed convincingly that BCS resulted in overall survival rates that were similar to mastectomy⁽⁹⁾. It was also established by then that adjuvant radiation therapy (RT) to the conserved breast was necessary to achieve acceptable rates of local recurrence. BCS, nowadays known by the terms wide excision or lumpectomy, is routinely practised and its long term efficacy is proven⁽¹⁰⁾.

Current interest lies in the surgical management of the axilla. Traditionally, axillary node dissection has always been a standard component of both mastectomy and BCS, providing accurate axillary staging, as well as effective regional control. This is, however, not without potential side effects, notably lymphoedema of the ipsilateral arm. Also, two-thirds of those presenting with breast cancer do not have affected nodes and therefore derive no therapeutic benefit. Previous attempts to stage the axilla while avoiding an axillary dissection e.g. blind node sampling, did not gain wide acceptance because of limited accuracy. More recently, the sentinel node biopsy (SNB) technique, which was first described in the management of penile carcinoma and later employed in the treatment of malignant melanoma, was adapted for use in breast cancer. It is based on the hypothesis that lymphatic drainage from a tumour reaches the sentinel node (SN) first, before other regional nodes. Selective sampling of the SN could therefore accurately reflect nodal involvement, and more importantly, a negative SN might allow axillary dissection to be safely avoided.

Lymphatic mapping and SN identification can be done using either blue dye or a radioactive tracer. The latter also allows preoperative scintigraphical visualisation of the lymphatic pathways and SN. These methods work well in practice and SN identification rates of over 90% have been reported with each method but it is generally accepted that there is greater consistency when both are used in combination. In this issue of the SMJ, the article by Namwongprom et al⁽¹¹⁾ reports an initial experience in 35 breast cancer patients who had radioisotope-guided SN identification and biopsy prior to axillary clearance. Their SN identification rate of 91.4% compares favourably with other reports. However, this study also reports a high false-negative rate of 30.8%, highlighting the main bugbear of SNB. A false-negative SNB in practice would result in the leaving behind of positive non-sentinel nodes. This could potentially be detrimental to overall survival either directly through uncontrolled regional recurrence,

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or indirectly through the inappropriate selection of adjuvant systemic treatment.

The current consensus is that a false-negative rate of up to five percent is acceptable and many studies have shown that this can be achieved, though the wide range of reported results⁽¹²⁾ suggests that technical aspects of the procedure need to be fully studied and optimised. A possible way of alleviating the effect of false-negative results is by selecting patients for SNB, who are more likely to be node-negative. The study by Tan et al⁽¹³⁾ identified four independent predictors of axillary node positivity. Such data may be helpful in establishing selection criteria for SNB. Some centres have already adopted SNB as a standard procedure of choice for the management of the axilla. At present, three randomised trials are in progress^(14,15) that will, in time, provide definitive answers to important questions concerning the safety and efficacy of SNB. It nevertheless appears certain that SNB will find its place in routine breast cancer management.

The development of less invasive means of diagnosis and surgical treatment of breast cancer does not remove the role of traditional surgical procedures. Excision biopsy is still necessary when other diagnostic tests are equivocal, mastectomy when the cancer is extensive or multifocal, and axillary clearance when the SN is positive. We do, however, now have a wider array of treatment options. The patient's choice is an integral part of selection of treatment, and cannot be assumed. The clinician's responsibility is to provide an objective opinion of the pros and cons of available options so that an informed choice can be made for treatment that best suits the patient's needs. **SMJ**

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