WORLD PROGRESS IN SURGERY

Progress in the Treatment of Breast Cancer—Introduction

In 1975, at the Sixteenth Congress of the Société Internationale de Chirurgie in Edinburgh, a symposium was presented on cancer of the breast at which the impact of biological research on the treatment of this disease was explored. Following the symposium, a series of papers was presented by surgeons from around the world that illustrated various aspects of the management of malignant breast neoplasms. It is now clear that a purely local approach to the treatment of primary breast cancer is no longer adequate because the disease is frequently generalized at the time of presentation. In this review we present a series of 19 succinct papers, some of which were given in Edinburgh, which illustrate current views on management. By way of introduction, we wish to make some editorial comments on these papers that are directed at highlighting some of the problems.

Results of Orthodox Treatment

Following its description by Halsted in 1894, classical radical mastectomy became widely accepted as the surgical procedure of choice for the treatment of primary cancer of the breast, and this operation is still commonly practiced in many countries. The first two papers in this review, by Robbins and Berg of New York and Brinkley and Haybittle of Cambridge, discuss the long-term results of radical mastectomy as practiced in the United States and England. In the New York series radical mastectomy was used alone, but in the series from Cambridge it was generally supplemented by postoperative radical radiotherapy. Both of these papers indicate that breast cancer in women has a long natural history. If survival for a normal duration of life is accepted as the hallmark of cure, apparently 20 or more years must pass after primary treatment before a "cured" group can be defined. Both studies also indicate that the proportion of patients with breast cancer who are cured by local therapy is unacceptably low. It appears that breast cancer is as fatal as many other neoplasms, but is more likely to take a chronic form.

Contrary to general belief, it is also apparent from both studies that the presence of axillary metastases at the time of primary surgery is sometimes compatible with long survival. In both series of cases approximately one-fifth of long surviving patients had involved axillary lymph nodes at the time of primary treatment. This finding should be remembered when the indications for systemic therapy are being discussed and when results are being reported.

Diagnosis

A flaw in the management of primary breast cancer is that a single operative procedure has been designed to accomplish three important steps in the management of the disease. These steps are: (1) diagnosis, by excision biopsy and frozen section; (2) local staging, by axillary node dissection; (3) definitive primary treatment by mastectomy. Ideally, these 3 steps should be separated, and diagnosis should precede staging, which in turn should precede treatment. Treatment may be local or systemic, and should be planned according to the proven extent of the disease. The third paper in this review, by Johnsson and Bjurstam of Göteborg, Sweden, describes the value of 3 methods of diagnosis: clinical examination, mammography and needle aspiration cytology. The latter method is commonly used in Scandinavia for microscopic diagnosis while in Britain drill biopsy, or the simpler alternative of needle biopsy using the Trav-enol TRU-cut needle®, is more popular because either allows study of the architecture of the tumor. An unequivocal tissue diagnosis may be obtained by these methods in 70–80% of patients, which avoids the need for frozen section examination of the tumor as a preliminary to mastectomy. The use of closed methods of biopsy defines those patients who next require staging procedures and allows frank discussion between doctor and patient before treatment.

Staging

The next 3 papers in this review, by Galasko of Manchester, Cuschieri of Dundee, and Cant and associates of Edinburgh, are concerned with staging. Although the importance of accurate clinical staging
should not be underrated, its main value is to determine the extent of local disease and to define those patients in whom local extension contraindicates operation. Clinical and radiological methods of detecting occult metastases are insensitive and in these papers, studies to determine the validity of more sensitive methods such as skeletal scintiscans and estimates of urinary hydroxyproline are described. Although better than radiography, the results of these methods are still disappointing and there is need to develop precise markers of occult dissemination. An additional method involves the estimation of circulating tumor secretory products such as CEA, β HCG, casein or lactalbumin, which may measure the tumor burden in the host and monitor residual disease after primary treatment. So far, the specificity of these tests has been poor.

The popular approach to staging depends on the histological stage of the axillary lymph nodes for indicating spread of disease. The greater the number of nodes involved by tumor, the worse is the prognosis and if 4 or more nodes are involved, the disease can be regarded as incurable. Palpable enlargement of the axillary lymph nodes is a poor guide to their invasion by tumor. Histological staging of the axilla requires a surgical operation which generally is combined with primary local therapy and forms part of a radical mastectomy.

For many years, some surgeons in New York and Amsterdam have used a preliminary staging procedure which includes biopsy of the apical axillary and internal mammary nodes. This approach has had the objective of defining patients with incurable disease in whom local radical surgery is doomed to fail. The paper by Van Dongen of Amsterdam reports his experience with this preliminary staging procedure in which frozen section examination is used to define the histology of these nodes. Extension of this staging procedure by biopsy of other nodes and by the use of other operative methods to detect metastatic disease is a rational step forward, provided it does not delay definitive surgical treatment.

**Treatment**

The orthodox treatment of primary breast cancer is either by radical mastectomy which may be followed by radiotherapy, or by simple (total) mastectomy and radical radiotherapy. Several controlled randomized trials have been carried out to compare these different forms of local therapy. These are reviewed in the paper by Stewart of Edinburgh who concludes that survival is not influenced by whether a patient has a radical mastectomy or a simple mastectomy and radiotherapy. However, it is important to appreciate that local recurrence rates do differ according to the type of local therapy and that immediate post-operative radiotherapy will delay progression of residual local disease. It should be noted that an increasing number of surgeons now preserve the pectoral muscles when performing a radical mastectomy so that the morbidity of the operation is reduced.

Controlled randomized studies have also been carried out to determine whether equal results can be achieved by less radical treatment. These also are reviewed by Stewart and are further described in a series of 6 short papers. Less radical therapy can be aimed at conservation of the breast, at conservation of the axillary lymph nodes, or at both. The papers by Hayward of London and Veronesi of Milan describe trials of treatment by wide local excision, conserving the breast, while the trial reported by Murray and his colleagues of London was set up to study a watching policy for the axilla. The results of the trial reported by Hayward indicate that wide local excision supplemented by radiotherapy gives less satisfactory results than radical mastectomy regarding both local recurrence and dissemination and survival. The dose of radiotherapy used in this trial is considered less than adequate and this underlines the importance of effective local control in determining ultimate control of the disease.

Forrest, and his associates from Cardiff and London report a study based on a selective policy of local therapy by simple (total) mastectomy and additional local radiotherapy according to the results of biopsy of the pectoral lymph nodes. Evidence is presented to suggest that axillary node sampling by pectoral node biopsy is a useful guide to axillary node status and may be used to select patients for appropriate treatment.

The advantage of greater conservation of normal tissues is to reduce morbidity. Although local recurrence may be increased, delayed surgery and radiotherapy still offer control. The key question concerns whether withholding prophylactic local treatment influences ultimate survival. Local recurrence is continued growth of residual local disease. Survival depends on whether occult metastases are present at distant sites, and the rate at which they are growing.

Reduction in the extent of local therapy is not likely to affect the survival of those patients in whom occult dissemination already is present and several controlled randomized studies have now been reported in which systemic therapy, either by endocrine means or by chemotherapy, has been used in early disease. The up-to-date results of two recent trials in which long-term chemotherapy with either single or multiple agents was given to patients after mastectomy, are reported by Fisher of Pittsburgh and Bonadonna's group of Milan. Only patients with proven axillary node involvement were included in both