

Short communication

Breast screening has increased the number of mastectomies

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Introduction

The aim of breast screening is to reduce mortality and morbidity from breast cancer. One of the areas of concern in relation to breast screening is the marked increase in the number of patients with ductal carcinoma *in situ* (DCIS) detected through breast screening.

DCIS comprises less than 5% of all symptomatic breast cancers but now comprises more than 25% of all screen-detected cancers [1]. Detecting DCIS should theoretically reduce the subsequent incidence of invasive cancer, and in terms of screening it should have the same effect as treating cervical intra-epithelial neoplasia of the cervix. DCIS has an excellent long-term outlook and there are concerns that many patients with DCIS would not have developed an invasive cancer if left untreated.

The issue in relation to DCIS therefore has to be avoiding potential overtreatment because few women die as a consequence of having DCIS, particularly if the carcinoma is low grade. Retrospective studies have found that, after excision (which often did not remove all of the DCIS), low-grade DCIS progresses to invasive cancer in only one-third of all women by 20 years [2].

New data from the UK Breast Screening Programme

The numbers of patients with DCIS has increased over the past decade. In 1998/99 there were approximately 1,500 cases, but in 2007/08 there were close to 3,500 cases (Figure 1). The percentage of patients being treated by breast-conserving surgery during this period has remained fairly constant at 30% (Figure 2). The effect of this is that the absolute numbers of women having mastectomies has increased from just under 500 in 1998/99 to over 900 in 2007/08 (Figure 3). These data mean that the absolute numbers of patients undergoing mastectomy has almost doubled over the past decade. Although a recent statistical model estimated that women attending for screening have a

166 times higher probability of having progressive DCIS or invasive cancer than nonprogressive DCIS, there remains concern that the natural history of DCIS has not been well defined [3].

From the Sloane Project, which collects data on all patients with DCIS treated within most of the major UK centres, it is evident that some patients with DCIS are undergoing mastectomies for a radiological extent of DCIS <40 mm. Size is not a good predictor of the overall recurrence rate in DCIS [4]; therefore, if the DCIS can be removed adequately even if there are large areas, then mastectomy is not absolutely required even when DCIS extends beyond 4 cm. The effectiveness of local excision is related to the fact that almost all DCIS is unicentric [4].

How to address the increasing mastectomy rate for DCIS within the Screening Programme, and what are the options?

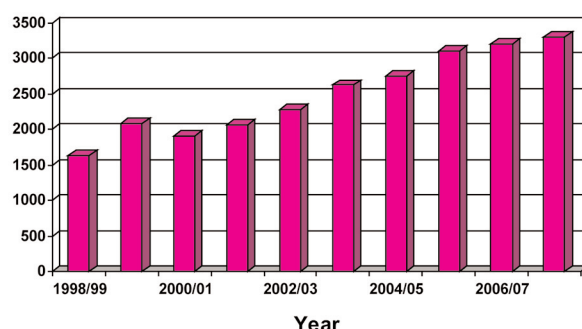
More than 50% of DCIS lesions are oestrogen receptor rich [5]. Preoperative aromatase inhibitors reduce proliferation in DCIS [6] and tamoxifen reduces recurrence in oestrogen receptor-positive DCIS, so oestrogen receptor-positive DCIS is hormone responsive [7]. This knowledge raises the option of neoadjuvant endocrine therapy and there is some evidence that this is effective.

From studies of invasive cancer, neoadjuvant endocrine therapy reduces the overall tumour size of both the invasive component and the *in situ* component, producing a central scar [8]. Neoadjuvant endocrine therapy of DCIS is being further investigated in a US study [9]. Early data are promising with results from the first six patients who have completed 3 months of treatment. The three oestrogen receptor-positive DCIS patients all showed a clinical response with a decrease in tissue density rather than a reduction in extent [9]. It is clear, however, that the optimal response time to neoadjuvant hormone treatment is longer than 3 months, and 9-month or 10-month treatment durations

DCIS = ductal carcinoma *in situ*.

Figure 1

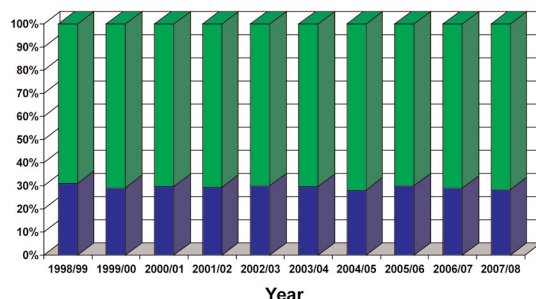
Numbers with DCIS



Patients diagnosed with ductal carcinoma *in situ* through the UK National Breast Screening Programme. Note in 1998/99 and in 1999/2000 the number of patients includes ductal carcinoma *in situ* (DCIS) and microinvasive cancers. Data provided by Gill Lawrence and her team at the West Midlands Cancer Intelligence Unit.

Figure 2

% treated by BCS or Mastectomy



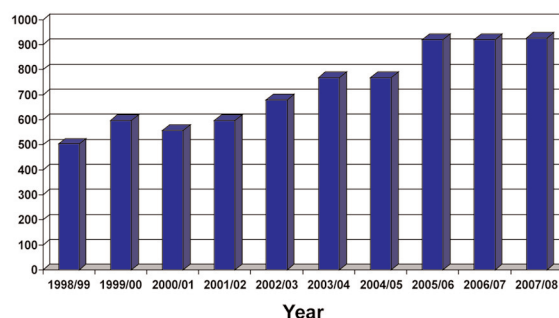
Patients diagnosed with with ductal carcinoma *in situ* treated by mastectomy or breast-conserving surgery. Percentage of patients diagnosed with ductal carcinoma *in situ* (DCIS) through the UK National Breast Screening Programme treated by mastectomy or breast-conserving surgery (BCS). Note in 1998/99 and in 1999/2000 the percentage of patients includes DCIS and microinvasive cancers. Data provided by Gill Lawrence and her team at the West Midlands Cancer Intelligence Unit.

are needed in some patients with invasive cancers to achieve a meaningful reduction in tumour size [10].

Approximately 40% of DCIS overexpress HER2 [7]. Neoadjuvant trastuzumab for invasive cancer increases the pathological complete response rate from 20% with chemotherapy alone to 40 to 50% with the same chemotherapy and trastuzumab [11]. There is evidence in the laboratory that anti-HER2 therapy is effective in DCIS, and ongoing trials are evaluating whether lapatanib reduces proliferation in HER2-positive DCIS [4]. Neoadjuvant anti-HER2 therapy for DCIS

Figure 3

Numbers treated by Mastectomy



Patients diagnosed with ductal carcinoma *in situ* treated by mastectomy. Absolute numbers of patients diagnosed with ductal carcinoma *in situ* (DCIS) through the UK National Breast Screening Programme treated by mastectomy. Note in 1998/99 and in 1999/2000 the number of patients includes DCIS and microinvasive cancers. Data provided by Gill Lawrence and her team at the West Midlands Cancer Intelligence Unit.

therefore requires exploring, has potential and may save some breasts.

Another option for large areas of DCIS is oncoplastic surgery, which excises the DCIS but leaves the breast shape intact and produces minimal scars. The success of breast-conserving surgery for the treatment of breast cancer is that this surgery can remove completely the local disease while preserving the natural shape and appearance of the breast [12]. Achieving the twin goals of complete tumour excision and a satisfactory cosmetic outcome can be challenging. The limiting factors are the amount of tissue that can be removed relative to the breast size and tumour location.

For larger areas of DCIS that require significant volume excision and reshaping of the affected breast, this is being combined with a simultaneous or delayed reduction mammoplasty of the opposite breast. Two surgeons, an oncoplastic surgeon and a plastic surgeon, provide the optimal approach for simultaneous bilateral mammoplasty procedures, reducing the operating time and combining the skills of both disciplines. Using oncoplastic surgery in larger breasts it is possible to excise areas of DCIS up to 10 cm. Excising more tissue during reduction in mammoplasty approaches results in a greater incidence of clear margins, and to date the complications have been limited and the cosmetic results excellent (Figure 3). This option is not widely available but it should be the aim to offer this option for all women with larger breasts, even with extensive unifocal DCIS, who wish to be treated by breast-conserving surgery. Such women need to be fully informed of the potential advantages, risks and complications of this procedure, including incomplete excision of all disease if the disease is more extensive than

was appreciated preoperatively or the possibility for a later mastectomy if the pathology is unfavourable.

Conclusion

It is time to try to reduce the number of mastectomies for DCIS. To achieve this reduction, more surgeons trained in oncoplastic techniques are required. There is a need for greater involvement of plastic surgeons during the discussion of treatment of such patients. Neoadjuvant endocrine and anti-HER2 therapy requires further consideration and study. The aim has to be to make the treatment fit the disease and not to make the patients fear the treatment more than the disease.

Competing interests

The author declares that they have no competing interests.

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