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Original Research

International variation in management of screen-detected ductal carcinoma in situ of the breast

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Abstract ***Background:*** Ductal carcinoma in situ (DCIS) incidence has grown with the implementation of screening and its detection varies across International Cancer Screening Network (ICSN) countries. The aim of this survey is to describe the management of screen-detected DCIS in ICSN countries and to evaluate the potential for treatment related morbidity.

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Overtreatment
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Methods: We sought screen-detected DCIS data from the ICSN countries identified during 2004–2008. We adopted standardised data collection forms and analysis and explored DCIS diagnosis and treatment processes ranging from pre-operative diagnosis to type of surgery and radiotherapy.

Results: Twelve countries contributed data from a total of 15 screening programmes, all from Europe except the United States of America and Japan. Among women aged 50–69 years, 7,176,050 screening tests and 5324 screen-detected DCIS were reported. From 21% to 93% of DCIS had a pre-operative diagnosis (PO); 67–90% of DCIS received breast conservation surgery (BCS), and in 41–100% of the cases this was followed by radiotherapy; 6.4–59% received sentinel lymph node biopsy (SLNB) only and 0.8–49% axillary dissection (ALND) with 0.6% (range by programmes 0–8.1%) being node positive. Among BCS patients 35% received SLNB only and 4.8% received ALND. Starting in 2006, PO and SLNB use increased while ALND remained stable. SLNB and ALND were associated with larger size and higher grade DCIS lesions.

Conclusions: Variation in DCIS management among screened women is wide and includes lymph node surgery beyond what is currently recommended. This indicates the presence of varying levels of overtreatment and the potential for its reduction.

1. Introduction

Ductal carcinoma in situ (DCIS) has become a relatively common disease after the introduction of screening mammography, representing up to 20–25% of all incident breast malignancies in industrialised countries [1–4]. The natural history of screen-detected DCIS is not yet completely understood [5] and we are therefore in large part unable to distinguish different conditions that are likely to exist under the same label of DCIS [6,7].

Management guidelines increasingly take this uncertainty into account by trying both to provide adequate care and to avoid unnecessary treatment. For example, axillary lymph node dissection (ALND) is not recommended for women with DCIS [8–10]. The International Cancer Screening Network (ICSN) oversees organised programmes that include quality monitoring of the process of screening and care. The purpose of the report is to assess practice variation in the management of screen-detected DCIS and the potential morbidity associated with detection of DCIS among participants in the ICSN.

2. Patients and methods

A survey was launched within the ICSN. All of the screening settings covered were population-based, organised screening programmes, with the exception of Czech Republic, which at the time did not adopt personal invitations, and of the United States, whose data, provided by the Breast Cancer Surveillance Consortium, derived from opportunistic screening in well defined populations.

Selected characteristics of participating programmes were collated from the ICSN web site (http://appliedresearch.cancer.gov/icsn) and reported in Table 1. Attendance rates exceeded 60% in all programmes for which this information was available with the exceptions of Switzerland and Japan.

A previous paper [4] on DCIS detection reports in detail the design of this survey. In brief, we sought data from the 33 ICSN member countries regarding the pure DCIS cases they identified within their screened population between January 1, 2004 and December 31, 2008. We asked sites to complete, based on individual data records from their screening and clinical databases often obtained by linkage with population-based cancer registries, a structured questionnaire that summarised data on DCIS detection, diagnosis and treatment. The questionnaire was piloted in a regional screening programme before distribution. Internal data consistency was checked routinely and outlying data were verified with data providers. All data were stratified by calendar year and age in decades, both referred to the date of the screening test. The following data stratifications were also included in the questionnaire: type of breast surgery by DCIS size; nodal surgery by DCIS size; nodal surgery by nuclear grade; nodal surgery by type of breast surgery; and radiotherapy by type of breast surgery. As size by clinical imaging was often unavailable, all sites were asked to provide pathological size ($\leqslant$10 mm, 11–20 mm, >20 mm).

For the analysis of DCIS management process we selected a number of measures encompassing issues ranging from diagnosis to surgical and adjuvant treatment, namely: pre-operative diagnosis (PO); time from abnormal screen to surgery; use of breast conserving surgery (BCS) as definitive intervention; use of ALND and sentinel lymph nodes biopsy (SLNB); radiotherapy after BCS. Indicators were identified, following a systematic literature review, from two main sources [9,10], by selecting measures believed to be collectable retrospectively from participating screening programmes. A pre-operative diagnosis was defined as the presence