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Self-perceived, but not objective lymphoedema is associated with decreased long-term health-related quality of life after breast cancer surgery

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Abstract

Background: The primary aim was to compare long-term health-related quality of life (HRQoL) in patients undergoing sentinel lymph node biopsy (SLNB) alone versus axillary lymph node dissection (ALND), with or without axillary metastases. Secondary aims were to a) investigate agreement between objectively measured and self-reported lymphoedema and b) compare, with respect to HRQoL, women with objective arm lymphoedema without subjective ratings and those with no objective but subjective ratings of arm lymphoedema.

Methods: The three study groups were defined by axillary surgery: 1) SLNB alone (N = 140), 2) ALND in patients without axillary metastases (N = 125) and 3) ALND in patients with axillary metastases (N = 155). Preoperatively, one and three years postoperatively arm volume was measured and questionnaires regarding self-perceived symptoms of arm lymphoedema and HRQoL were completed (The Swedish Short Form-36 Health Survey, SF-36).

Results: Out of the original 516 who had axillary surgery, 420 (81%) completed the study. There were no statistically significant differences in HRQoL between the three study groups. No statistically significant agreement was found between self-perceived and objectively measured arm lymphoedema. Women without self-perceived arm lymphoedema, regardless of objective arm lymphoedema or not, scored higher on all eight SF-36 domains than those who reported self-perceived arm lymphoedema.

Conclusion: Women reporting self-perceived arm lymphoedema, regardless of objective lymphoedema or not, have a decreased long-term health-related quality of life. This indicates that more attention should be given to the subjective reports of symptom in order to better help these women.

Keywords: Breast cancer; Sentinel lymph node biopsy; Axillary lymph node dissection; Health-related quality of life; Arm lymphoedema; Self-perceived symptoms

Introduction

Axillary lymph node dissection (ALND) used to be the standard procedure for staging the axilla in women with invasive breast cancer. It is, however, associated with a number of side effects including pain, limited shoulder movements, numbness and arm lymphoedema.[1–4] Arm lymphoedema can be severe and may cause considerable psychological morbidity, pain, disability and impair the activities of daily living.[1,2,5–7]

Sentinel lymph node biopsy (SLNB) has, since the late 1990s, replaced ALND in staging the axilla in clinically node-negative breast cancer patients in most western countries.[8] In a recent meta-analysis, the incidence of arm

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lymphoedema was about four times higher in women with ALND performed compared to SLNB.[9] The ALMANAC trial (Axillary Lymphatic Mapping Against Nodal Axillary Clearance), a prospective randomised study from United Kingdom, with a follow-up time of eighteen months, demonstrated low arm-morbidity and better health-related quality of life (HRQoL) after SLNB compared to ALND.[4] In a Canadian study comparing breast cancer survivors eight years after diagnosis with age matched controls without cancer, HRQoL was similar to that among controls, with the exception of arm problems and sexual satisfaction.[10] A number of studies report lower levels of HRQoL in patients diagnosed with lymphoedema.[11–13] Most patients in previous studies comparing HRQoL in patients operated with SLNB and ALND were node-positive, making it difficult to evaluate the role of axillary surgery per se and its impact on HRQoL.[14,15]

To the best of our knowledge, there is no prospective study assessing HRQoL and potential effects of arm lymphoedema on HRQoL, at several time points, with a follow-up time over two years, comparing patients undergoing SLNB alone with patients undergoing ALND with or without axillary metastases. This present trial consisted of three study groups of axillary surgery, with and without node positive disease, which allowed us to evaluate the role of axillary surgery per se, without the influence of adjuvant treatment and metastatic disease.

The primary aim was to compare long-term HRQoL after SLNB alone versus ALND, in both node-negative and node-positive breast cancer patients. Secondary aims were to a) investigate agreement between objectively measured and self-reported lymphoedema and b) compare, with respect to HRQoL, women with objective arm lymphoedema without subjective ratings and those with no objective but subjective ratings of arm lymphoedema.

Methods

Patients

The regional committee for medical research ethics of Örebro county council approved the study, Dnr 500: 16 979/99. Women with invasive breast cancer at four high-volume university centres in Sweden, between 1999 and 2004, were asked to participate in the study. In total, 557 women agreed to participate. Forty-one women (7%) had no axillary surgery and were therefore excluded from the study. Ninety-six of 516 women (19%) did not have a postoperative arm-volume measurement and/or did not complete the questionnaires and were therefore referred to as 'non-attenders' in this study. The final study cohort included 420 women (81%) with primary invasive breast cancer who had at least one postoperative evaluation at one and/or three years (Fig. 1). They underwent either mastectomy or breast conserving surgery with SLNB alone or in combination with ALND or ALND alone. Patient characteristics and treatment are described in Table 1. The three study groups comprised of women operated with mastectomy or breast conserving surgery and 1) SLNB alone (N = 140, 33%), 2) ALND in node-negative patients (N = 125, 30%), and 3) ALND in node-positive patients (N = 155, 37%). In the third study group, patients with ALND performed due to preoperatively known axillary metastases as well as those with ALND performed after a positive SLNB were included. Difficulty in understanding the Swedish language, bilateral breast cancer, clinically fixed axillary metastases and previous surgery or radiation therapy to either axilla were exclusion criteria.

Treatment

Detailed information regarding the patients included in the study and treatment is presented in a previous paper.[16] All cases were discussed both pre and post operatively at the Multidisciplinary Team Conference. At this conference, recommendations regarding adjuvant treatments with chemotherapy and/or endocrine therapy were made depending on patient's age, hormone receptor status, tumour grade and co-morbidities in accordance with the Swedish National Breast Cancer and Regional guidelines.[17]

Measurements

Arm volume

Arm volume was measured using the water displacement technique recorded in millilitres (ml) for each patient preoperatively, and one and three years after surgery.[18,19] Lymphoedema was based on criteria commonly used in the literature; $\geq$10% increase in the operated arm volume as compared to the control arm.[20,21] A nurse, trained in the procedure, measured both arms repeatedly and the difference in ml between the arms was recorded.

Study questionnaires

The questionnaires were completed at three points of assessment: before surgery and one, two and three years post operatively. In this study we present data one and three years postoperatively. The Swedish Short Form-36 Health Survey (SF-36) was used to assess HRQoL. It is a standardized generic questionnaire that has been widely used in international studies. The Swedish version has been validated, and normative data for Swedish women are available.[22,23] The SF-36 consists of 36 items constituting eight domains: physical functioning (PF), role limitations as a result of physical problems (RP), bodily pain (BP), general health perception (GH), vitality (VT), social functioning (SF), role limitation due to emotional problems (RE), and mental health (MH). The first three domains (PF, RF, and BP) measure physical well-being and the last three domains (SF, RE, and MH) relate to emotional well-being. The two