



The breath of life – Womens' experiences of breathing adapted radiation therapy

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A B S T R A C T

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Purpose: To describe and analyze how women with breast cancer experience breathing adapted radiation therapy (BART) and to explore how women manage daily radiation therapy.

Method: Individual interviews were conducted with 20 women treated with BART for breast cancer concerning their perception of radiation therapy. The transcribed interviews were analyzed using qualitative content analysis.

Results: 'The breath of life' was the overall theme, as the women experienced the breathing as a way in which to influence their treatment and thus their survival. 'Participating in one's treatment, for good or ill', was the main category with four subcategories, 'Knowing one has done something good', 'Getting an extra bonus – healthwise', 'The experience of being in control' and 'Being in a high-technology environment'. The breathing technique became the strategy by which they could manage their treatment and gave them a sense of participation which led to a feeling of being in control. The women also felt that breathing benefited their health both mentally and physically. The high-technology environment was experienced as both hopeful and frightening.

Conclusion: Survival or increasing the chances of survival, are of ultimate importance for a woman with breast cancer. BART requires commitment from the women, which was perceived as offering them an opportunity to participate in their own treatment, for their survival. Increasing the women's possibilities to participate in their treatment benefits their health and welfare during an otherwise turbulent time and allow the rehabilitation process to start during treatment.

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Introduction

The global incidence of breast cancer among women has almost tripled during the past 30 years and in 2010 approximately 1 643 000 women around the world were diagnosed with breast cancer (Forouzanfar et al., 2011). In Sweden 7000 women annually are diagnosed with breast cancer, which means that between 15 and 30 women are diagnosed with breast cancer every day (National Board of Health and Welfare, 2009). In approximately 80% of these women breast cancer treatment is supplemented with radiotherapy (SBU, 2003). Most radiation treatments are given as a supplement after surgery, to reduce the risk of local recurrence

but breast cancer-specific survival rates also improve after irradiation (Clarke et al., 2005; Vinh-Hung and Verschraegen, 2004; Whelan et al., 2000).

Although the survival rates are improving, breast cancer diagnosis often results in a wide range of feelings, such as anxiety and concern (Dabrowski et al., 2007; Deshields et al., 2007; Jemal et al., 2004; Wengström et al., 2001). Studies (Schnur et al., 2009; Halkett et al., 2008) also reveal that women who receive radiotherapy for breast cancer experience great anxiety before, during and after treatment. The women have concerns about what radiotherapy is, how it works, how they can manage their therapy and what life will be like for them in the future (Halkett et al., 2008). The radiation therapy period usually lasts between 16 and 25 days, but can sometimes continue for up to 33 days, and the daily treatment time is about 20 min.

Increased cardiovascular-related morbidity and mortality have been reported in women who have received radiation therapy for breast cancer on the left side (Hoening et al., 2007; Schultz-Hector and Trott, 2007). Radiation therapy technology has improved

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gradually over the years but the risk of heart damage is difficult to estimate as it can take 10–20 years before the damage to the heart occurs. A recent study by [McGale et al. \(2011\)](#) which examined the incidence of heart disease in 35 000 women who received radiation therapy for breast cancer between 1976 and 2006 showed a greater incidence of heart disease in women irradiated for breast cancer on the left side compared to those irradiated for breast cancer on the right side. The risk of heart attack as well as angina, pericarditis, and valvular heart disease increased when radiation therapy for breast cancer was given on the left side ([McGale et al., 2011](#)). In another study ([Roychoudhuri et al., 2007](#)) cardiovascular mortality was shown to be 25% higher 15 years after irradiation for breast cancer on the left side than for irradiation on the right side.

A new radiation therapy technology, breathing adapted radiation therapy (BART), has been introduced to reduce the risk of cardiac events since, especially for women treated for breast cancer on the left side, it is difficult to avoid irradiation of the heart ([Nemoto et al., 2009](#)). BART was first introduced in Japan in the late 1990s ([Kubo and Hill, 1996](#); [Minohara et al., 2000](#)) and was further developed in the USA for breast cancer treatment ([Lu et al., 2000](#)).

One important factor to consider in radiotherapy for breast cancer is that the chest moves when the patient breathes. BART, also known as “gating”, uses this movement to its advantage ([Korreman et al., 2008](#)).

When the patient takes deep breaths the chest rises further away from the heart. The radiation is given only when the patient is in the right respiratory phase, in other words, when the chest is as far from the heart as possible ([Korreman et al., 2008](#)). Patients are trained to breathe deeply, regularly and reproducibly in order to optimize the gain from the treatment. A recorded voice guides the patient's breathing rhythm and the times for exhalation and inhalation can be varied to suit the individual ([Korreman et al., 2008](#); [Nemoto et al., 2009](#)). The recorded voice is played at every session. Performing the preparatory reference imaging computer tomography (CT) in the same breathing phase, treatment planning can be done in the image data to match the patient's position during radiotherapy. A camera in the CT room as well as in the treatment room monitor the patient's respiration and register the breathing pattern by means of infrared light reflected by a marker box, placed at the same spot on the patient's sternum on every occasion. A breathing graph can be seen on the computer screen in the control room, monitored by the nurses, and is displayed in real time. The radiation interval, a so-called “gating window”, is also highlighted on the computer screen, the extent of this window is set individually for each patient. The irradiation takes place when the marker box on the patient's chest, and thus the patient's chest, is within the limits of the gating window ([Nemoto et al., 2009](#)).

In the meeting before radiation therapy is started all the medical staff have a real opportunity to assess women's understanding and concerns about the impending treatment, to listen to their fears and provide reassurance about the treatment and the management of any adverse events ([Halkett et al., 2012](#)). [Marbach and Griffie \(2011\)](#) reveal that cancer patients want the medical staff to convey clear expectations of treatment plans and provide educational information about the disease and its treatment as well as support.

No previous articles have been found which deal with how patients experience and manage BART. BART is more time consuming than conventional radiotherapy. The longer treatment time combined with the active participation required from the patient suggests that patients need strategies to cope with the daily treatment. Knowledge is needed concerning how patients experience BART in order to help them achieve a good level of compliance. The purpose of this study was to describe and analyze how women with breast cancer experience breathing adapted radiation therapy and to explore how they manage the daily radiation therapy.

Methods

Design

A qualitative approach comprising interviews was used to conduct this study.

Sample

Interviews were conducted in spring 2010 with 20 women, from the southern part of Sweden, with breast cancer on the left side receiving curative breathing adapted radiation therapy including the breast/chest wall and lymph nodes. The inclusion criteria were: female, 18 years of age or older and able to speak and write Swedish. The sample was strategically chosen to include a variety of ages and stages of breast cancer.

The mean age for the sample was 51.6 years (range 32–69, median 59.5). All the participants except one were native Swedish speakers. The majority of the women were married or lived with a partner. Both employment status and the level of education varied. Seven of the women had children living at home. Four women who were asked declined to participate and no reason was required or given.

Interviews

The study was conducted in interview form with two open questions in which the author asked respondents to describe their experience of receiving breathing adapted radiation therapy and how they managed their daily radiation treatment. The interviews began with a clarification of the purpose of the study. As the interview was conducted in the form of conversation, questions were asked to clarify or further describe the informants' answers but also to confirm understanding ([Kvale, 2007](#); [Rapley, 2001](#)). Follow-up questions focused on points the interviewees brought up concerning BART and their experiences. The scheduled interviews were conducted at places chosen by the respondents and took place in connection with their radiation treatment. All the interviews were conducted by the first author in a secluded room in the hospital. The interviews were taped and transcribed verbatim and lasted between 25 and 90 min (median 45 min).

Data analysis

The interviews were transcribed verbatim and qualitative content analysis was applied to the resulting text. The analysis was conducted in Swedish. This method of analysis was chosen as the amount of text is comprehensive and needs to be organized and structured with the aim of interpreting the underlying meaning of the informants' stories ([Polit and Beck, 2006](#); [Burnard, 1991](#)). The method of analysis followed that of qualitative content analysis inspired by [Burnard \(1991, 1996\)](#), [Burnard et al. \(2008\)](#). The interview texts were read and reread several times by the first author to get an idea of what both the text and the interview were about, in order to gain a deeper understanding of the meaning of the text. This can be compared with trying to understand the informant's situation ([Burnard, 1991](#)).

Then the interview text was examined by the first author focusing on the experience of undergoing breathing adapted radiation therapy with special attention to how the informants managed their daily treatment. Repeated interpretations of the complete transcript of all the interviews were made at separate abstraction levels ([Burnard, 1991, 1996](#)). Major or significant statements were emphasized, and the similarities and differences noted. Secondly, the transcript was divided into meaning units and

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