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Morphological characteristics of and factors related to moisture-associated dermatitis surrounding malignant wounds in breast cancer patients

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A B S T R A C T

Purpose: Patients with malignant breast wounds (MBWs) have multiple symptoms. In particular, care for exudates or peri-wound moisture-associated dermatitis (MAD) is difficult. However, MAD has not been distinguished from peri-wound dermatitis. Therefore, care for patients with MAD has not been well established. The aim of this study was to describe morphological characteristics of MAD in MBWs and link morphological characteristics of MAD to related factors.
Methods: We conducted a qualitative descriptive study and a cross-sectional study. Data were collected by qualitative participant observation and structured interviews. The qualitative descriptive study was conducted using the 'morphoqualitative analysis' method. Data analyses were performed using qualitative research methods. In the cross-sectional study, the participants were classified into 2 groups for comparison: with MAD (MAD group) and without MAD (non-MAD group).
Results: Characteristics of 24 MBWs were examined. Morphoqualitative analyses of data generated 17 subcategories and 3 categories. We could morphologically define MAD by findings of 'radial shape matching the dressing' and 'half-fusiform shape over the dressing'. Regarding factors related to MAD, necrotic tissue type was significantly more severe in the MAD group than in the non-MAD group ($p = 0.048$). Wound exudate leakage was significantly more frequent in the MAD group than in the non-MAD group ($p = 0.013$).
Conclusion: Our study provides several points for nursing MBWs. Morphoqualitative analyses of MAD are quite important for evaluating possible causes of MAD as well as selecting effective interventions.

Introduction

Breast cancer is the most frequent malignancy in women (Jemal et al., 2011) and is one of the most common neoplasms metastasizing to the skin (Koga et al., 2010). In particular, any infiltration of the epithelium by tumour cells is defined as a malignant wound (Ashino, 2007). The prevalence rates of malignant wounds in women with breast cancer have been unclear, but previous studies have reported frequencies ranging from 12.1% to 66.3% in patients with metastatic cancer (Koga et al., 2010; Maida et al., 2008).

Malignant breast wounds (MBWs) have multiple symptoms, including exudates, bleeding, pain, odour and problems with the peri-wound skin (Maida et al., 2009; Merz et al., 2011; Naylor, 2002; Probst et al., 2009; Schulz et al., 2002). No optimum care protocols for exudates or for the peri-wound skin have been established. Everyday control of massive wound exudates overflowing dressings may be very difficult for patients or nurses and

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may result in peri-wound moisture-associated dermatitis (MAD) (Probst et al., 2009). However, there have been very few studies on MAD in relation to MBWs. Schulz et al. (2002) suggested a number of peri-wound problems associated with MBWs, including skin irritation and breakdown, on the basis of caregiver interviews; however, they could not distinguish MAD from peri-wound dermatitis caused by other factors (e.g. inflammation associated with cancer, irritated skin by tape or radiodermatitis) (de Haes et al., 2003; Diggelmann et al., 2010; Gray et al., 2011; Murakami et al., 2001; Japanese Nursing Association Wound Care Committee, 2002; Porock and Kristjanson, 1999; Sussman and Bates-Jensen, 2007). Their study (Schulz et al., 2002) was also limited by the fact that data were obtained from caregivers and not clinicians.

Many patients with MBWs may not want to be examined by clinicians because of fear, anxiety or stigma related to the appearance of their MBWs, and this may be the reason why peri-wound dermatitis surrounding MBWs remains problematic for clinicians. However, to improve the patient's quality of life, peri-wound dermatitis should be intensively investigated in a qualitative manner. We consider that nurses have an advantage when conducting clinical research related to peri-wound dermatitis and MAD in patients with MBWs because compared with doctors, nurses can build a more intimate rapport with their patients. In addition, the distinction between MAD and other forms of dermatitis may be important for nurses because they have more opportunities for direct intervention when treating MAD. We believe that the morphoqualitative analysis method, a nursing research method developed by our group (Nanjo et al., 2011), is a promising approach for further study of MAD surrounding MBWs. This is a form of qualitative research in which the detailed morphological characteristics of skin lesions and wounds on photographs are described verbally.

Previous studies have suggested a number of possible risk factors for MAD in patients with malignant wounds, including irritant wound exudates (Gray et al., 2011), skin fragility due to cancer therapy (de Haes et al., 2003) and a lack of wound management (Japanese Nursing Association Wound Care Committee, 2002; Sussman and Bates-Jensen, 2007). However, the detailed relationships between MAD and such factors have not been completely elucidated in relation to MBWs. Thus, this study aimed to describe morphological characteristics of peri-wound dermatitis and MAD in MBWs using the morphoqualitative method described above and to link morphological characteristics of MAD to related factors, thereby exploring options for preventive nursing.

Materials and methods

Study design

We used a qualitative descriptive study design (morphoqualitative analysis) to identify morphological characteristics specific to MAD of MBWs because this is an appropriate format to determine the facts of the case and to better comprehend the phenomenon (Barker et al., 2002). In addition, in the second part of this study, we used a cross-sectional design to identify factors correlated with MAD.

Participants

Patients were recruited between February 2010 and June 2011. The study setting was a breast centre based in a general hospital in Tokyo. The patients were selected on the basis of the following criteria: (i) presence of a malignant wound in an adult woman with breast cancer and (ii) presence of exudates.

We sequentially recruited patients from all 27 patients with MBWs. In total, 24 patients were included in the present study because 3 patients did not provide their consent to participate in the study.

Collection of demographic data

Demographic characteristics were collected from medical records by a single researcher and included the following: age, sex, duration of breast cancer, duration of skin infiltration or metastasis, hormone receptors, human epidermal growth factor receptor type 2 (HER-2), operative procedure, metastatic site, wound site, medical treatment (within 1 month), radiation therapy (within 90 days) (Cox et al., 1995; World Union Wound Healing Societies (WUWHS), 2007), employment status and comorbidities. A single researcher and attending nurse assessed the scale of performance status (PS) (Ando et al., 2001; Oken et al., 1982), which comprises 5 points (0: good; 4: poor) (Ando et al., 2001; Finkelstein et al., 1988).

Examination of malignant wounds and the surrounding skin

Data were collected by qualitative participant observation and by structured interviews during usual wound care at the outpatient clinic. Initially, the nursing researcher made every effort to establish an intimate rapport with the patients. To investigate the relationship between the peri-wound skin and exposure of wound exudates, the researcher obtained detailed information concerning wound care by interviews and observation. For example, the researcher examined in detail how the dressing was attached to the skin. Moreover, photographs of the malignant wounds and the peri-wound skin were taken from various directions by the researcher (N. T.) using a digital camera (RICHO10, RICHO Co., Tokyo, Japan). A commercially available reference colour chart with 9 calibrated colours (Casmatch, BEAR Medic Co., Chiba, Japan) (Iyatomi et al., 2009) was placed on the surrounding skin for accurate colour description. A flash was not used.

The patients' wounds and the condition of the surrounding skin were examined by visual inspection and by palpation (pressing down with a finger and pinching of tissues) (Bates-Jensen et al., 1992; Sussman and Bates-Jensen, 2007).

Morphoqualitative analysis of MAD

The qualitative descriptive part of the study was conducted using the morphoqualitative analysis method. This novel method was established by our research group and is a useful approach for qualitatively evaluating details related to wound/skin conditions, their time course and other related factors (Nanjo et al., 2011). Details related to individual MBWs and the condition of the surrounding skin were recorded by sketching the photographs and observation by N.T. (Fig. 1). Information from these records was then verbalised in detail to characterise the morphology of the wounds and the surrounding skin for each patient. The following data analyses were performed using standard protocols for qualitative nursing research (Gregg, 2008): First, verbal data were divided into multiple simple descriptive codes. Second, subcategories were generated by extracting similar codes for the skin surrounding the malignant wounds. The categories were generated from the same subcategories. The researcher then evaluated the data and derived a conclusion related to morphological characteristics of MAD.

Reliability of morphoqualitative data

Reliability of the data collected in this qualitative study, including their credibility, transferability and confirmability, was