Skin care during breast radiotherapy

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Abstract: Breast cancer is the most common form of malignancy and accounts for 12% of all cancers. More than half of breast cancer patients will receive radiation therapy as part of their prescribed treatment. Approximately 95% of patients receiving radiation therapy will develop acute skin reactions at the site of treatment. Skin care protocols are compiled by radiation therapy departments to prevent and manage acute and chronic skin reactions. However skin care protocols vary between treatment centers and radiotherapists leading to confusion and anxiety among patients.

The aim of this study was to survey the different skin care protocols for patients undergoing breast radiotherapy implemented by radiotherapy departments in the Gauteng region in order to suggest a standardized skin care protocol based on available literature.

Keywords: aqueous cream, *Aloe vera*, gentian violet.

Introduction

Breast cancer is the most common form of malignancy and accounts for 13% of all cancers diagnosed in the UK [1]. The modalities for the treatment of breast cancer are surgery, chemotherapy, hormone therapy and radiation therapy. More than half of breast cancer patients will undergo radiation therapy, where ionizing radiation will cause cells, both normal and malignant, to be destroyed [2].

Approximately 90% of patients receiving radical radiation therapy post lumpectomy or mastectomy will develop acute skin reactions at the site of treatment [2,3,4,5]. Acute skin reactions occur within 11 to 14 days of irradiation and are graded according to severity along a continuum range from grade 0 = no change to grade 4 = ulceration [2,4,6-9].

Skin care protocols are compiled by radiation therapy departments to prevent, and manage, acute and chronic skin reactions. The protocols aim to maintain cleanliness, protect skin integrity, alleviate pain, protect from trauma, prevent and control infection and odor, and promote wound healing [5]. However, skin care protocols vary between treatment centers and radiotherapists and are not always supported by research [3,6,9]. The researchers have also identified that different oncologists in the same center use different skin care protocols leading to confusion among patients. O'Shea and Thirion [10] have highlighted that there are 62 different skin care products being recommended to radiotherapy patients in Ireland, with only 7 of the 62 suggested products supported by clinical trial evidence .

A literature review was conducted in order to establish if a commonality exists with regards to skin care advice given to breast cancer patients. No evidence was found to suggest a common standard of care, however many topical skin agents have been reported on with varying successes. Currie and Wheat have reported that the topical use of a wheatgrass extract may decrease the impact of acute radiation toxicity in patients undergoing radical breast radiotherapy [11]. A prophylactic beclomethasone spray has reportedly reduced the incidence of wet desquamation in patients receiving a radical dose of 50 Gy to the breast [12]. Although vitamin E is often included in skin care protocols, Chun *et al.* [13] report no significant decrease in acute skin reactions associated with vitamin E usage. Even though various topical agents have been reviewed in the literature there seems to be very little established scientific evidence to support or contradict the skin care protocols currently suggested to patients for the management of acute skin toxicity [13].

The aim of this study was to survey the different skin care protocols for patients undergoing breast radiotherapy implemented by radiotherapy departments in the Gauteng region in order to suggest a standardized skin care protocol based on available literature.

Methods

A questionnaire formulated by 3rd year radiotherapy students based on a combination of work place learning, and reviewed literature, was complied. Questions were complied to cover topics such as washing instructions, topical agents allowed and not allowed, management of acute skin reactions, sun exposure and swimming advice. The head radiographer from each radiotherapy department in Gauteng was approached telephonically by the researchers and asked to participate in the survey. The questionnaire was then faxed to the department concerned with a covering letter inviting participation. Consent was implied if a completed questionnaire was returned to the researchers. The names of the departments participating ($n = 7$) were not reflected on the returned questionnaires. A 100% response rate was achieved. A literature review was conducted in order to formulate a standardised skin care protocol by conducting a Medline search using "skin care" and "breast radiotherapy" as key words. The results were analysed by means of descriptive statistics and portrayed graphically.

Results

Participants were asked to detail advice given to patients regarding the management of skin reactions, the results of which can be seen in Table I. Eighty-six percent (86%) of participants advise using hydrocortisone cream for dry desquamation which has also been reported in the literature as a frequently recommended treatment of dry desquamation by nurses in Belgium [14]. An area of concern is the fact that 71% of participants reportedly advise the use of gentian violet which has been proven to be carcinogenic [2].

Participants were then asked to describe their departmental protocol regarding skin care recommendations during radiotherapy, as indicated in Table 2 and Figure 1. Some agreement seems to exist among departments as the majority agree that deodorant should be avoided, wet shaving is disallowed, tight clothing should be avoided, and sun exposure should be kept to a minimum. The advice given is consistent with nursing care literature [14]. As can be seen in Figure 2 the majority (81%) of departments allow the use of aqueous cream and a minority (15%) the use of *Aloe vera*. This finding is supported by literature which suggests that aqueous cream is significantly better than *Aloe vera* at reducing both dry desquamation and pain related to breast radiotherapy.

Table I: *Management of skin reactions (n = 7)*

Topical Agent	Percentage %	n = 7
Maizena	71	5
Hydrocortisone	86	6
Aqueous and hydrocortisone	14	1
Gentian violet	71	5
Vaseline gauze	28	2
Bactroban	14	1
Aqueous cream	14	1
Cortisone and aqueous cream	14	1
Burn wound dressing	57	4
Radiocare	43	3
Betnovate	14	1
Lutivate	14	1
Treated cream	14	1

Discussion

Based on available literature sourced via a Medline search and the results of our study the following skin care protocol is recommended.

- **Washing**

  Washing with water or water and soap is not associated with skin toxicity [8,9] therefore it is recommended that patients be allowed to wash with a mild soap.

- **Topical agents**

  Normal skin care products that contain metals, such as aluminum, zinc, or alcohol, are contraindicated during radiotherapy treatment because they cause radioactive particles to be attenuated as they penetrate the skin surface thus causing more severe skin reactions [12]. Irradiated skin should be kept moisturized, using aqueous cream, and not exposed to any products containing metals, such as zinc and aluminum. The study by Burch, Parker, Vann and Arazie demonstrated that applying normal skin care products containing metals had an insignificant impact on surface skin dose and therefore concluded that skin reactions will not become more severe if these products are used during radiotherapy [8,9]. It is further recommended that *Aloe vera* be used since the literature suggests that while it does not moisturize the skin it may delay the onset of acute skin reactions [5].

The following is recommended for the management of skin reactions.

- **Dry desquamation**

  The use of aqueous cream as it has proven to be more effective than *Aloe vera* in the management of dry desquamation [2,3,7].

- **Moist desquamation**

  The use of a hydrophilic, or silver dressing, is recommended in the management of moist desquamation [2,5,12]. The use of

Table II: *Skin care recommendations*

Skin care recommendations	Comments
Deodorant	All departments disallow the use of deodorants, but 28% said *mitchum* deodorant is allowed if patient insists.
Shaving cream	Not allowed in 100% of departments.
Shaving	Patients are allowed to use an electric shaver in 100% of departments.
Clothing	All departments recommend the following: No tight clothing to avoid friction. No under wire bra's. Natural fabric e.g. cotton.
Sun exposure	All department recommend: Avoid sun exposure by keeping treatment area covered. No sunscreen.
Swimming	43% allow a short swim and recommend rinsing with clean tap water afterwards. 57% do not allow swimming.
Skin care after completion of treatment	The majority recommend that skin care protocols be continued for two weeks after treatment.

gentian violet should not be considered as it has been proven to be carcinogenic [2].

- **Ulceration**

  Silver dressings in the management of ulceration are recommended [5].

After completion of treatment patients are advised to continue with the above mentioned protocol for 12 to 15 days.

Conclusion

Skin care during breast radiotherapy should entail formulating a protocol that combines knowledge gained from current literature with consideration for each patient's comfort and preferences. Based on the findings of this study a protocol is recommended in an attempt to assist radiotherapy departments in finding this balance.

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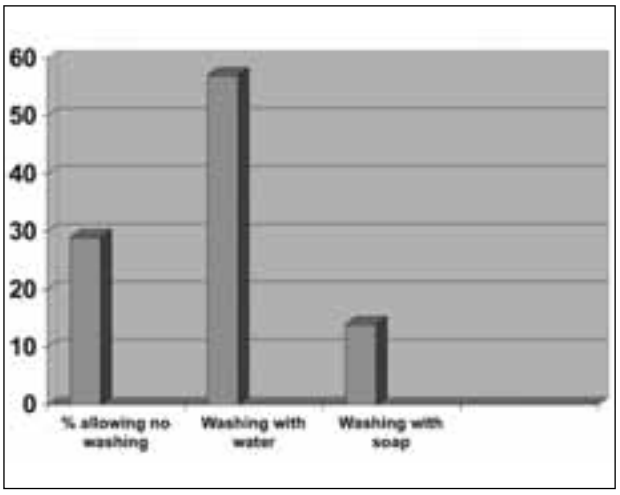

***Figure 1:** Washing instructions.*

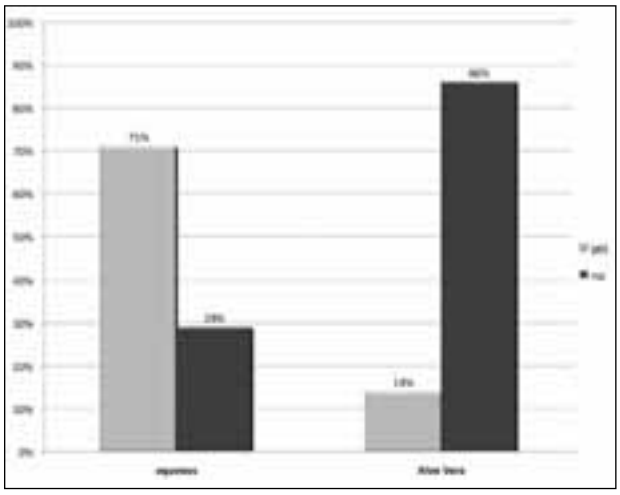

***Figure 2:** Percentage of departments allowing the use of aqueous cream and* Aloe vera.

Muriel Chesney—Sad news (3/21/2010)

Muriel Chesney passed away peacefully in hospital on Friday 19 February, aged 89 years. Muriel, and her twin sister Noreen (who survives her) were joint authors of several radiography papers and textbooks, including *Radiographic Anatomy of the Chest and Abdomen; Radiographic Photography; Care of the Patient in Diagnostic Radiography;* and *X-Ray Equipment for Student Radiographers.*

Muriel also contributed regularly to professional publications, including *Radiography* and *The Journal of the Society of Radiographers*. In 1963, Muriel was appointed honorary editor of *Radiography*, a role she held for 17 years, until a full-time editor was appointed.
Muriel trained as a radiographer at the General Hospital, Birmingham in the early 1940s and qualified in 1944. Muriel continued to work for this hospital group the whole of her professional career. In 1949, she passed the examination for Fellow of the Society of Radiographers and was elected to Fellowship (FSR). She then went on to gain the Teacher's Diploma of the Society of Radiographers (TDSR) in 1963.

In 1972, Muriel was presented with the Stanley Melville Memorial Medal and in 1985 she retired from her post of Principal of the Central Birmingham School of Radiography. Ten years later, in 1995, she received the Society and College of Radiographers 75 Years Gold Medal.

Muriel continued to be involved in the profession after her retirement as an active member of the International Society of Radiographers and Radiological Technologists (ISRRT). As well as attending congresses and events throughout Europe, she also co-edited the organisation's newsletter along with her sister Noreen.

Muriel is considered one of the profession's leading lights and will no doubt be missed by many. Our thoughts go to Muriel's sister Noreen and her family and friends.

MSR Secretary PACKYA NARAYANAN DASSAN MALAYSIAN SOCIETY OF RADIOGRAPHERS

"International Concern over excessive radiation doses from Medical Imaging"

All technologists should be concerned at the recent publicity about Medical Imaging dose rates, particularly related to CT examinations. Unfortunately, many of these concerns are well founded.

I urge you all to read the excellent comments delivered by Chuck Shields (shown below), the CEO of the Canadian Association of Medical Radiation Technologists (CAMRT). ISRRT totally support these views and commends Chuck for his statements.

I also refer you to the excellent website of the International Atomic Energy Agency (IAEA) which focuses on radiation protection in Medical Imaging - http://rpop.iaea.org/RPoP/RPoP/Content/index.htm

We all know about Risk vs Benefit, but this is an issue which affects all of us – we hold ourselves to be the experts on this subject so make sure you are able to provide your patients with the best protection and information.

Rob George, President ISRRT

CAMRT Newsletter: http://www.camrt.ca/english/publications/pdf/Newsletter-

Dose Reduction – an issue for MRT's to claim

CAMRT CEO Chuck Shields speaks at a media conference at the House of Commons, Canada

Technologists are in a key position to play a crucial role in the reduction of radiation dose. Indeed, doing so builds on technologists' traditional concern to protect patients from dangerous levels of radiation.

There are many ways that technologists can, and have been addressing this important issue:

- *Every Canadian technologist is familiar with the ALARA principle, which is the basis for addressing this patient safety concern.*
- *Technologists are in an excellent position to educate patients and their patients' family members about the importance of reducing their exposure to radiation.*
- *Technologists can and do keep up-to-date with techniques that can reduce radiation exposure.*
- *Technologists ensure that the body area for which an image is required is well coned and use shielding to reduce unnecessary radiation exposure to the patient.*
- *Technologists can and do talk to radiologists to ensure that the scan prescribed is the most appropriate for the patient's needs.*
- *Working together at the institutional, provincial and national levels, technologists can raise awareness of this important issue and can work to ensure that policies and programs are adopted to protect their patients from excessive radiation dose.*

Dose reduction is an issue that is at the core of a medical radiation technologist's professional purpose and values. It brings together the twin elements of patient care and technical expertise and precision that are so important to technologists. As such, it is an issue for which technologists, individually and through their provincial and national professional associations, can and must be leaders in the health system.