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Radiotherapy skin care: A survey of practice in the UK

Rachel Harris [a,*,1], Heidi Probst [b,1], Charlotte Beardmore [c,1], Sarah James [c,1], Claire Dumbleton [c,1], Amanda Bolderston [d,1], Sara Faithfull [e,1], Mary Wells [f,1], Elizabeth Southgate [g,1]

[a] The Society and College of Radiographers, 207 Providence Square, Mill Street, London SE1 2EW, UK
[b] Faculty of Health and Wellbeing, Sheffield Hallam University, UK
[c] The Society and College of Radiographers, UK
[d] Fraser Valley Cancer Centre, British Colombia, Canada
[e] Faculty of Health and Medical Sciences, University of Surrey, UK
[f] School of Nursing and Midwifery, University of Dundee, UK
[g] Birmingham Cancer Centre, Queen Elizabeth Hospital, Birmingham, UK

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ABSTRACT

Aim: The primary objective of the survey was to evaluate clinical skin care practice in radiotherapy departments across the United Kingdom.
Methods and sample: A questionnaire containing sixty-one questions grouped into eight themed sections was developed and a link to an on-line survey, using the Survey Monkey™ tool, was e-mailed to all radiotherapy department managers in the United Kingdom ($N = 67$). Each recipient was invited to provide one response per department.
Key results: Fifty-four departments responded within the allocated timeframe giving a final response rate of 81%. Products and their use for skin conditions varied and some outdated and unfounded practices were still being used which did not always reflect the current evidence base. The amount of data routinely collected on skin toxicity was limited making it difficult to quantify the extent of skin morbidity following radiotherapy.
Conclusion: The survey demonstrated variability in skin care practice in radiotherapy departments across the UK, with limited practice based on evidence or on skin toxicity measurement and monitoring.

Introduction

The Society and College of Radiographers (SCoR) last reviewed UK radiotherapy centre skin care practice in 2000 and produced guidelines for radiotherapy departments.[1] A decade later it was timely to re-assess what was actually happening in clinical practice with the aim of assessing current practices and subsequently updating the information.

Skin reactions from external beam radiotherapy are one of the most common side-effects from treatment and a factor which can limit radiation dose. Megavoltage linear accelerators with skin sparing capabilities have significantly reduced the severity of reactions from radiotherapy,[2] however accelerated dose schedules with combined radiation chemotherapy regimens[3] have increased the condition. The most severe reactions tend to be in seen in those patients receiving high doses to large fields. Recently the use of intensity modulated radiotherapy (IMRT) has been shown to offer the opportunity to reduce skin toxicity in some cases, especially the rates of dry and moist desquamation when treating cancers in the head and neck region.[4–10]

Despite changes in practice and published guidelines[1,11,12] radiotherapy skin care appears to have changed little over the years, with departments caring for their patients' skin in different ways. Consequently, a plethora of agents is being used on the skin in a non-standardised fashion.[13,14]

Faithfull et al[15] note 'a growing awareness of the need for evidence based practice in radiotherapy' but that there are 'well documented disparities between clinical practice and research findings which could underpin care'; reflecting that supportive care is often based on no, little, or poor evidence. Comparing data across radiotherapy skin care studies is difficult as often the methods used are unclear, patient allocations differ, different skin assessment scales are used, and follow-up data is inconsistent.[16]

Although it is unlikely that radiation reactions can be completely prevented, the current driver in clinical practice is to minimise and delay the onset of symptoms.

* Corresponding author. Tel.: +44 020 77407 250; fax: +44 020 7740 7204.
E-mail address: rachelh@sor.org (R. Harris).
[1] In collaboration with the Department of Psychology, University of Exeter.

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The extent of skin reaction is often dependent upon the clinical site being treated. For example, patients undergoing radiotherapy for head and neck cancer require immobilisation and often receive combination chemotherapy. This can make these patients very vulnerable to intensified skin reactions and it is known that interruptions in radiotherapy for this category can have a detrimental effect on treatment outcome.[17]

The use of an effective evidence-based skin care protocol and monitoring system[18,19] would assist in a researched approach to radiation skin care management, aiding product evaluation and justification of practice.

Background

In Barkham's 1993 assessment of radiotherapy skin reactions and associated treatments,[13] 52% of UK radiotherapy departments reported dry desquamation as a common event and 85% of departments reported moist desquamation as an occasional event. However, as Glean et al[20] noted, the incidence of skin reactions has not been accurately quantified in departments and practices have changed since Barkham's survey.

Turesson et al[21] demonstrated that the number of basal cells in the epidermis declines during fractionated radiotherapy due to increased cell cycle arrest and reduced mitosis. The reduction in the basal cells causes a thinning of the epidermis and an inflammatory reaction. The variation in the reaction appears to be a genetic predisposition due to individual DNA repair capacity,[22–27] genetic radiosensitivity,[28–30] and/or intravascular thrombin generation.[31] Specific genetic tests could therefore be used to predict those patients most likely to develop a severe radiotherapy reaction.[32,33]

Certain clinical factors can also help to predict the possibility of a radiation reaction.[34,35] Extrinsic factors are treatment related, i.e. dose; volume; fractionation; adjuvant treatment; treatment in a skin fold area (e.g. inframammary fold or rectal cleft); use of bolus material; type of immobilisation; treatment technique.[36] These factors need to be under constant review with changing work practices; for example, with the introduction of IMRT. Intrinsic factors are individual patient related, e.g. larger breast size[2,36]; higher body mass index (BMI)[25,37,38]; pre-existing conditions (e.g. psoriasis).[21,39] Such intrinsic factors may enhance a skin reaction and therefore should be recorded as a baseline and closely monitored.[12,40–42]

Gosselin[43] notes that some skin care products did show promising results but comparing data across studies is difficult because of the wide variety of differing assessment tools. By utilising skin assessment tools on at least a weekly review basis, it would be possible to monitor and record a patient's skin reaction throughout the treatment stage.

Naylor and Mallet[44] undertook a literature review to investigate the products being used for radiotherapy skin reactions and the evidence base behind their use. They identified certain products where evidence contraindicated use:

- Petroleum jelly[45–47] as it may create a build up effect and is difficult to remove;
- Topical antibiotics unless there is a proven infection[18,46,47];
- Topical steroids on broken skin due to the adverse effect on the wound healing process[45,48–50];
- Gentian Violet due to potential carcinogenic side-effects.[18,49,51]

Another important aspect of skin care during radiotherapy is that of patient well being. It may not be possible to stop or even reduce the rates of skin reaction from occurring, but there may be comfort and psychosocial benefits that skin care products provide, such as empowerment and control.[43] Recording of patient acceptability/satisfaction and compliance (as incorporated into some existing scales[52]) are helpful indicators of how appropriate a product will be for future use.

The survey

A panel of experts was consulted for the issues they felt required investigation in a survey of skin care practice. The panel consisted of a team from the Society and College of Radiographers, two leading nursing professionals, the Chair of the SCoR Research Group, and the authors of the recent systematic reviews. Initially the survey was large and unfocussed as panel members had different aspects of care they felt required exploration. Two previous surveys[53,54] into radiotherapy skin care practice aided this survey construction and focus, as did an examination of the relevant literature.

D'haese et al[53] evaluated skin care during radiotherapy practice by nurses in Flanders. They designed a 58 item questionnaire structured into 4 main sections: preventative advice, advice for erythema, dry desquamation and moist desquamation. Dividing the questionnaire into these key sections seemed a logical easy to follow format which the project team adapted.

Swamy et al[54] developed a questionnaire to explore variations in radiation oncologist practice across the USA in managing breast cancer, specifically related to skin reactions. Their main questions focussed on prophylactic skin care, risk factors, topical products used, and percentages of patients with skin reactions. These themes were also built into the survey tool.

This final survey comprised of 61 questions, grouped into 8 sections (Table 1).

An advanced draft of the survey tool was reviewed by the SCoR Public and Patient Liaison Group and was also piloted at one radiotherapy department. Comments returned were minor and around clarity. These were incorporated and the survey tool finalised.

The final survey is a comprehensive tool which is relevant to UK radiotherapy practice.

Sample

A link to an on-line survey, using the Survey Monkey™ tool, was e-mailed to all radiotherapy department managers in the United Kingdom ($N = 67$) and they were invited to provide one response per department. A 'back-up' pdf file was also provided which could be printed off and a hard copy returned if required (2 departments used this option). Anonymity was maintained for all respondents.

Fifty-four departments responded within the allocated timeframe with a final response rate of 81%.

Main results

Not all departments responded to all questions, therefore *n* values stated for each result are associated with the number of responses to each particular question, as opposed to the number of returned responses.

Table 1
Distribution of survey questions.

Section	Number of questions
Pre-treatment – assessment	14
Pre-treatment – prophylactic skin care	6
During treatment – assessment	7
During treatment skin care – erythema	8
During treatment skin care - dry desquamation	8
During treatment skin care – moist desquamation	9
Post-treatment – assessment and skin care	5
Review of guidelines	4