Comment on "Acute radiation dermatitis in breast cancer: topical therapy with vitamin E acetate in lipophilic gel base" by S Martella et al 2010 ecancer 190

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Introduction

Good evidence from well-designed clinical trials remains elusive in informing radiation skin care. Morbidity from radiation skin reactions is at best distressing and at worst a dose limiting factor, and these researchers are to be commended for their interest in advancing knowledge of the topic.

Local protocols

Local policy in this treatment centre appears to be application of steroid cream, and the authors acknowledge that best current evidence supports that albeit from a sparse research base [1,2]. Local policies in treatment centres continue to be determined by habit and preference rather than research-based evidence yet the research base continues to struggle to provide answers [3–5]. The approach taken by the group formulating the Best Practice Statement in Scotland utilized levels of evidence where experienced nurses, doctors and pharmacists offer skin care guidelines based on available evidence supported by knowledgeable, skilled and experienced clinical expertise. This level of evidence is considered to be weak and health care professionals must take responsibility for progressing the research questions.

Interventions

Several interventions appear to have been introduced in this case study, i.e. vitamin E; tocopheral; lipophilic gel; escharectomy; antibiotics. No dressing is indicated but unless these were in-patients it is likely that some kind of wound covering was applied. The study by Macmillan et al [29] demonstrated that even a simple dry dressing with non-adherent properties appears to significantly impact negatively upon healing time for Radiation Therapy Oncology Group (RTOG) grade 3 skin reactions. There is a physiological basis for the choice of lotion applied, and again this is challenging given the dubiety around the cellular processes involved in radiation skin damage and repair. The physiology of radiation skin reactions is a source of debate, but there is now common belief that whether endothelial vasodilation is involved or not, the reaction is mediated by the inflammatory response Denham et al [27,28], Simonen [33], Tannock [34]).

The lotion appears to have been used prophylactically since first day of treatment. Use of lotions and/or dressings for prophylaxis has not been tested widely [Maiche 1994, 6–8]. Further data are, therefore, welcome.

The number of variables to be included in clinical studies for radiation skin care is ever increasing [9,10,7,11,30,12–14]. Quality of evidence grading criteria necessarily suggest the grade of current evidence is therefore ‘low’, as emergent research ‘is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate’ [15].

The use of antibiotics in this study is also interesting. While antibiotics are routinely prescribed in managing toxicities associated with radical doses of radiotherapy, the paper by Hill et al [16] regarding six cases where staphylococcus aureas was implicated in severe dermatitis introduced the idea that pathogens may be a more common variable in skin reactions than previously thought and early intervention may improve morbidity. Vavassis et al (2008) similarly report the use of silver leaf dressing for treatment of radiation dermatitis in patients receiving radiotherapy to the head and neck. While these researchers could demonstrate no reduction in RTOG grade of skin toxicity, positive outcomes suggested were diminished severity within the grade, accelerated healing and improved pain control. While this is a small study it should also be noted that the standard for comparison in this study was silver sulfadiazine (Flamazine) cream. Vuong et al [17] used silver leaf dressing preventively for its antimicrobial properties in a small series of consecutive patients undergoing radiotherapy to the perineum and demonstrated lower dermatitis scores for the intervention group when compared with historical controls.

Primary and secondary outcomes

One of the principle hurdles in comparing published studies of radiation skin care lies in the dubiety over primary and secondary outcomes measured, and this study is no exception. A review of published studies reveals a variety of primary and secondary outcomes used to assess benefit. Most focus upon prevention or minimization of skin reaction, i.e. time to RTOG reaction grade 1, 2 or 3; time to healing from grade 3 reaction commencing, percentage of skin in field affected; while others focus on supportive care aspects of the experience, i.e. sleep, pain and itch. Mak et al [18] also measured the aesthetic appeal
of the dressing to patients as a secondary outcome and report preference due to aesthetic appearance when objective numeric assessment measures reveal no benefit. Safety and tolerance (of wound dressing) have also emerged as outcome measures [19]. These researchers also measure time to resumption of treatment, which is an interesting choice of outcome. These researchers state that after 25 days there was re-epithelialization and after 40 days the site was 'excellent' and it is difficult to estimate what was being assessed at 40 days.

**Measures**

A further hurdle in comparative potential within skin care research is the range of measurement tools utilized in published studies. While the Radiation Therapy Oncology Group (RTOG) [20] remains the ‘gold-standard’ in terms of validity and reliability and indeed international acceptability, many authors have attempted to address its limitations [21,22,31,23,7]. These authors have tested the STAT [21], and once more data to support the ongoing development and reliability of the measure is useful. The STAT combines patient and treatment variables, observer scoring and patient reported symptoms and was tested for both research use and for utility in everyday clinical practice. The work postdates Lopez et al’s [24] comparison of three different scoring systems, and the accumulated data on the measure might be usefully tested in this way. Lopez et al [24] found the RTOG to be superior in its accuracy, but do comment that ‘reporting the outcome of radiotherapy is not satisfactory without a description of the treatment related side effects’. Wengstrom et al [25] tested the RTOG with reflectance spectrophotometry and digital camera. The camera measured erythema and melanin levels in the skin by measuring reflected light, and the resulting score is termed the erythema or melanin index. While the RTOG demonstrated excellent interrater reliability, the digital camera proved to be a valid and reliable objective measure. Wengstrom et al [25] concludes that the images taken by a digital camera can easily be arranged and take little (clinical) time. They also offer the potential to collect images in a database for scrutiny by different persons at a different time both in clinical and in research settings, across time and geography. Wengstrom et al [25] further state the potential of the digital camera in developing predictive capability for individual skin response to radiation but once more state the importance of collecting data on the subjective experiences of skin reactions alongside the objective photographic evidence.

**Conclusion and recommendations**

Any advance in the knowledge of how best to support patients with radiation skin reactions has to be welcomed. The principle weakness in the case report is the lack of transferability. Case study research carries little weight although some authors would disagree [26]. Single report case studies almost certainly offer only a limited perspective, and it is hoped that these researchers progress this to a pilot study.
References


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