When the Patient Seeks Cure: Challenging Chemotherapy and Radiation Side Effects Requiring Creative Solutions

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When undergoing concomitant chemotherapy and radiation therapy for anal cancer, patients often experience significant side effects, including grade 1 or 2 radiation dermatitis, pain, exudate, and diarrhea. This case study presents a grade 3 reaction complicated by complex medical conditions. In addition to an evidence-based skin care treatment and side effect management plan that support patients during this intense period, this article offers creative strategies to provide a cost-effective healing option.

At a Glance

• Patients receiving concomitant chemotherapy and radiation therapy for anal cancer may experience erythema and dry desquamation (grade 1), moist desquamation and blistering (grade 2), pain, and diarrhea, all of which present nursing challenges.
• Patient education regarding prophylactic skin care is of paramount importance for these patients to prevent or minimize severe radiation dermatitis.
• Grade 3 radiation dermatitis includes confluent moist desquamation and bleeding, requiring a break from treatment; this situation often requires the consultation of a wound care specialist.

When R.B., a 56-year-old man with a history of Crohn’s colitis and chronic perirectal abscess, was diagnosed with a new anal fistula and squamous cell carcinoma of the anal canal, he was put on a curative regimen. R.B. was treated concomitantly with 5-fluorouracil (Adrucil®) and mitomycin (Mutamycin®) and a six-week course of external proton beam therapy (XRT). This course was complicated by a methicillin-resistant *Staphylococcus aureus* perirectal abscess. On the day of admission to the hospital, R.B. presented to the XRT center to receive the 26th of 30 planned radiation treatments and was found to have a fever with chills and lightheadedness. He had a grade 2 skin reaction in the perianal area from the XRT. He was assessed by the radiation oncology nurse practitioner (NP) and sent to the emergency department for additional acute care assessment and management. R.B. was then admitted to the inpatient medical oncology unit for management. Once admitted, the palliative care service, pain service, and wound care clinical nurse specialist (CNS) were consulted for recommendations on management of his extensive perianal wounds.

Treatment

The first priority was to determine a dressing regimen that was cost-effective and would protect R.B.’s skin because the buttocks and groin areas were involved. Because the ongoing concurrent chemotherapy and radiation therapy would cause his wound to continue to worsen, preventing further infection was important.

As expected, soon after admission, R.B.’s skin reaction in the radiation treatment field progressed to a grade 3 confluent moist desquamation with bleeding. The dark, dead, thin skin that was covering the area flaked off to reveal glistening, open, clean areas that were quite painful. Initially, exudate was minimal but quickly progressed to involve a considerable amount of serous exudate. The wound care CNS recommended resuming treatment previously ordered by the radiation oncology NP, which involved R.B.’s taking room temperature saline sitz baths and ointment and dressings being applied to the affected areas following drying. In addition, cool saline compresses were used to soothe and cover the underlying skin. The protocol used in radiation oncology was followed (see Figure 1). When R.B. was first admitted with grade 2–3 radiation dermatitis, the wound care CNS...
Radiation or chemotherapy and radiation

- Wash the skin using a mild, moisturizing soap and warm water during the bath or shower. Pat dry with a soft towel. Soaps should be unscented and pH balanced, and they should not contain lanolin. Baby shampoo may be used to wash the hair and scalp.
- Topical steroids are evidence based. Unscented, lanolin-free hydrophilic lubricants or moisturizer creams may be used on intact skin. Patients need to be instructed not to use any moisturizing products on their treatment field within four hours prior to radiation.
- Do not use cosmetics or perfumed products on radiated skin.
- Use deodorant only on intact skin. Instruct patients not to apply deodorant within four hours prior to radiation. Antiperspirants can be used.
- Do not use cornstarch baby powder, particularly in the areas of skin folds (e.g., axilla, inframammary fold). Doing so can create an environment for fungal or bacterial infection.
- Wear loose, comfortable clothing, preferably made from cotton or a soft fabric.
- Protect the skin from the sun or cold wind. Wear a hat or cover the exposed area.
- Avoid using tape, adhesives, or adhesive dressings within the treatment field to prevent mechanical injury. Use sterile rolled gauze or net tubing if dressings are necessary.
- Do not use heating or ice packs in the area of the treatment field. Also, avoid hot tubs and saunas.
- Try not to shave in the area of the treatment field. Do not use hair depilatories or wax removal of hair in the treatment field. Use an electric razor if shaving is necessary.
- Avoid swimming in pools, lakes, and the ocean if any desquamation is present. If able to swim, patients should be instructed to immediately wash the treatment field area with warm water and soap after swimming.
- Use cool mist humidification only if it is required for other medical reasons.
- Avoid sun exposure and trauma following radiation treatment for at least two years. Use sunscreen, particularly in the radiation treatment field. This includes underneath clothing or a swimsuit. Use sunscreen with an SPF of at least 30 or higher at all times.

Grade 1 skin toxicity (faint erythema or dry desquamation)

- Wash area with mild soap and water. Soaps should be unscented and pH balanced, and they should not contain lanolin. Baby shampoo may be used to wash the hair and scalp.
- Taking sitz baths or soaking in the bathtub in warm water may help soothe perineal or anal skin, reduce erythema, and aid in itching.
- Apply a hydrophilic lotion to provide moisture and maintain skin integrity.

Grade 2 skin toxicity (moderate to brisk erythema or patchy moist desquamation confined to skin folds)

- Wash area with mild soap and water. Soaps should be unscented and pH balanced, and they should not contain lanolin. Baby shampoo may be used to wash the hair and scalp.
- Switching to a heavier oil-based product that provides a skin barrier may be needed. Film may be used for prophylactic prevention of moist desquamation.
- For areas of moist desquamation, barriers or hydrogels may need to be considered. Diaper rash ointments or zinc oxide may be used in areas of patchy moist desquamation.

Grade 3 skin toxicity (confluent moist desquamation of > 1.5 cm diameter and not confined to skin folds, pitting edema)

- Cleanse with room temperature normal saline, which may be more soothing than water. The use of specialized dressings may be used based on principles of wound healing. Assessment of the patient, patient comfort, the need for frequency of dressing changes, and cost are all considerations in decision making. Normal saline compresses may be applied three or four times per day.

Grade 4 skin toxicity (skin necrosis or ulceration of full thickness dermis)

- Specialized wound care with collaboration of radiation oncologist, medical oncologist, and dermatologist is required.

FIGURE 1. Skin Care Recommendations for Patients

Note. Based on information from BC Cancer Agency, 2013; Dest, 2010; Graham et al., 2004; Hemati et al., 2012; Hunter et al., 2007; McQuestion, 2010; Wong et al., 2013.

recommended dressing changes every eight hours.

Per the skin care regimen recommended by the radiation oncology NP, R.B. was to add two tablespoons of aquarium salts to the sitz bath water and soak for 30 minutes several times per day and as needed after bowel movements. R.B. found this to be a cost-effective way of doing his sitz baths at home, rather than using normal saline bottles. A large box of aquarium salts was obtained at a local pet store. While doing sitz baths, R.B. was able to keep the affected areas moist and use gauze on the areas of the groin and buttocks that could not be immersed in the basin. R.B. used a 60 mm syringe to continually moisten the gauze during sitz baths.

Following the sitz bath, R.B. was advised to administer a patient-controlled analgesia (PCA) bolus of pain medication (hydromorphone [Dilaudid®]) and then gently dry the affected area. In addition, morphine intrasite gel was recommended by the pain team to be applied by the RN using a 1–5 mg syringe to the affected areas and with each dressing change; a syringe was used because the gel is a controlled substance, and the amount given must be documented. Once applied, the morphine intrasite gel, which provides comfort and moisture to facilitate healing, was to be gently smoothed out on the treatment field with a clean glove. The area was to then be air dried with a fan created by the wound care CNS. Because the area was anatomically difficult to dry and the patient was experiencing significant pain, a strategy was needed to expedite the drying process prior to and after placing the topical morphine before applying the secondary dressing. The wound care CNS was able to create a fan from tongue depressors, index cards, and tape for this purpose.

Prior to dressing application, five 8” x 3” Telfa® pads and one 4” x 3” Telfa pad were coated with Aquaphor® ointment using a sterile tongue depressor. They were then applied to the affected areas of the treatment field. The larger pads were applied in this manner: one to the midline over the crack of the sacral area and wrapped under the buttock to cover the perineal area; one each on either side of this central pad, on the left and right buttocks; one on the left anterior groin; and one on the right anterior groin. The smaller pad was applied to the top of the midline sacral pad. Thin, soft disposable
underwear were used, with the perineal seam cut out to wrap around the hips and hold the dressings in place.

Discussion

Providing adequate pain control was important because R.B.’s pain increased as his skin reaction to the radiation evolved and became more severe. R.B. had considerable pain, and his hydromorphone PCA needed to be increased. When the PCA was first ordered, his settings were 2 mg every 10 minutes with an hourly limit of 8 mg and no basal rate. The morning after his PCA was initiated, he reported that his pain levels ranged from 6–9 on a scale of 0–10, with 0 indicating no pain and 10 indicating most pain. R.B. added that getting out of bed was taking him about 10 minutes because of pain with movement.

The palliative care service, along with input from his nurse, attempted to re-adjust R.B.’s pain regimen. The new regimen included a basal rate to provide a more steady state pain control. The new settings were 0.5 mg/ml hydromorphone PCA with settings of PCA 1.2 mg every 15 minutes with a 2 mg basal rate and an hourly limit of 6.1 mg, which reduced his pain to a more tolerable level. The morphine intrasite gel dose was increased to three 5 mg (total of 15 mg) syringes with each dressing change, which allowed for the covering of the entire radiation treatment field in the pelvic area. In addition, pregabalin (Lyrica®) 50 mg and ketamine (Ketalar®) 20 mg, which were to be taken orally every eight hours, were added as adjunct pain medications to achieve better pain control. The day after these medication changes, R.B. reported that his pain had decreased to 5–8 out of 10 and the following day to 5–7 out of 10. His pain and skin integrity improved daily.

In an effort to provide more general comfort, the attending RN had suggested and ordered a special overlay therapeutic surface mattress, which R.B. found to be beneficial. He reported that this mattress was much more comfortable than the general hospital mattress in relieving pressure on the wound area. Another RN on the inpatient oncology floor called the burn unit to see if any supplies there could be helpful with sitting; the burn unit resource nurse recommended a sterile cellulose pad, which healthcare providers on the unit commonly used for patients with burns to the perineal area. When sat upon, the cellulose pad prevents sticking of the skin and allows for absorption of the copious serous drainage from the perianal and groin area. R.B. found the pad to be comfortable, so more were obtained to be used daily.

Four days after R.B. finished XRT, the skin on his buttocks, anus, and perineum demonstrated a grade 3 moist desquamation and his pubic and groin areas demonstrated a grade 2 dry desquamation. See Figure 2 for grade 3 radiation dermatitis. Prior to discharge, R.B. needed to be converted to a long-acting pain medication because he did not want to go home with a PCA. His pain medication was converted to fentanyl (Duragesic®) 125 mcg per hour transdermally every 72 hours, ketamine 20 mg orally every 8 hours, and hydromorphone 6–10 mg orally, as needed, every 3 hours. The pharmacy calculated the out-of-pocket expenses for the morphine intrasite gel at $66–$99 per month. R.B. could not afford this amount, and he decided that he would go home without the morphine intrasite gel. R.B. had no adverse effects on this pain medication regimen. At discharge (10 days after finishing XRT), he rated his pain as 2–3 out of 10 and said he felt an increase in his activity level. R.B. was sent home 16 days after his admission.

One week after discharge, R.B. followed up with his radiation oncology NP, and his skin was found to be about 70% better. Two weeks later, he had stopped all pain medications and gained weight, and he was able to sit on the examination table, fully on his pelvis, without difficulty. His skin was more than 90% healed, with just a couple of small moist areas in the area of the fistula, as well as drainage. He was active—working on his son’s truck, riding his tractor occasionally, and walking his dog. More importantly, the palpable tumor areas were soft and appeared to be more normal, and R.B. was better than when he first presented. R.B. reported that, for the first time since his diagnosis, he had no anorectal pain. He was anticipating seeing his surgeon the following week, with a plan to likely go to surgery for an abdominalperineal resection the month afterward. R.B. is now 18 months from his treatment, has no pain or evidence of disease, and is enjoying his active life again.

Conclusion

Patients undergoing concurrent chemotherapy and radiation therapy treatments for anal cancer often experience grade 1 and 2 radiation dermatitis and are best managed at home after a discussion about prophylactic skin care. More infrequently, patients may have concomitant medical conditions that create risk for extensive side effects, which can require inpatient management. For these patients, side effects can be intense, difficult to manage, painful, and financially burdensome, and they may have long-term impacts on quality of life.

The regimen outlined in this article was part of a team approach for this patient, grounded in evidence-based recommendations of radiation side effects developed by a radiation oncology NP, a wound care CNS, multiple clinical oncology bedside nurses, a pharmacist, and a palliative care NP. These recommendations—consisting of an easy-to-follow plan of care that facilitates healing, is cost-effective, and allows for improved outcomes—can help to guide nurses caring for these patients.

References

Dest, V.M. (2010). Systemic therapy-induced...


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