

Photo vignette

Ulcerated erythematous plaque on the right breast localized to the previously irradiated area.

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Abstract

Radiation recall dermatitis (RRD) is an inflammatory reaction limited to previously irradiated areas and occurs following the subsequent administration of a drug [1]. Herein, we present a patient with severe RRD associated with pain and necrosis.

Keywords: Radiation recall dermatitis (RRD)

Case synopsis

A 47-year-old woman presented with sudden onset of a painful skin eruption on the right breast. Four months earlier, she had undergone needle biopsy of the right breast and had been diagnosed with breast cancer. Right lumpectomy and sentinel node biopsy had been performed, resulting in a final diagnosis of HER2-positive invasive micropapillary carcinoma (pT1N0M0, Stage IA). After surgery, she started radiotherapy (total, 60 Gy) without serious adverse effects. Eleven days after completing radiotherapy, adjuvant treatment with intravenous trastuzumab, docetaxel, and carboplatin was initiated. The cutaneous manifestation suddenly developed 3 days after the first chemotherapy treatment.

Physical examination revealed an ulcerated erythematous plaque with mild edema around the operative wound in the lower inner quadrant of the right breast (Figure 1). The border of the lesion was very well demarcated and limited to the previously irradiated area. Bacterial, fungal, and mycobacterial cultures of the exudate all yielded negative results. Chest X-ray revealed no pneumonia. The results of routine laboratory investigations were within normal limits.

Histopathological examination of a punch biopsy specimen from the right breast lesion revealed epidermal necrosis and mild perivascular lymphocytic infiltration with vascular dilation in the upper dermis (Figure 2).

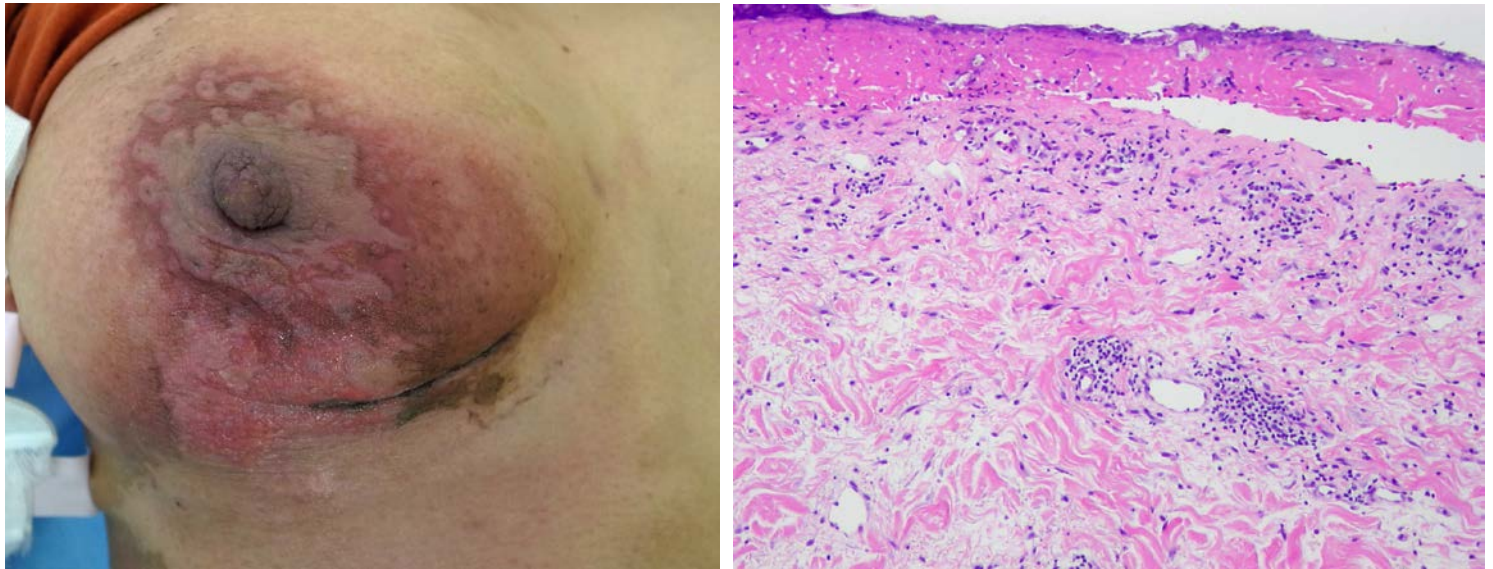


Figure 1. Ulcerated erythematous plaque in the right inner quadrant of the left breast. **Figure 2.** Histopathological examination of a punch biopsy specimen from the right breast lesion revealed epidermal necrosis with mild superficial perivascular lymphocytic infiltration (hematoxylin and eosin staining; original magnification $\times 100$)

Based on these findings, the lesion on the right breast was diagnosed as RRD. The patient was treated with betamethasone valerate and gentamicin sulfate ointment, resulting in complete resolution within 2 weeks. She subsequently chose to continue treatment, receiving three more cycles of trastuzumab, docetaxel, and carboplatin at the same dose every 4 weeks with no further episodes of RRD.

Discussion

The radiation recall phenomenon is an acute inflammatory reaction confined to previously irradiated areas that can be triggered when certain trigger drugs are administered [1]. Although numerous organs can be affected, this phenomenon is rare and most reports describe the appearance of skin lesions. Extracutaneous recall reactions may involve the lung, esophagus, small intestine, musculoskeletal system, mucosa, and central nervous system. This reaction is most commonly associated with chemotherapeutic drugs such as the anthracycline doxorubicin, the taxanes (docetaxel and paclitaxel), and antimetabolites (gemcitabine and capecitabine). In our case, three drugs, trastuzumab, docetaxel, and carboplatin, could have induced radiation recall reactions; each drug has been reported to be associated with the development of RRD [1, 2].

Clinically, RRD typically presents as erythematous pruritic, macules, papules, and plaques that may blister or desquamate [3]. A more severe reaction may occur, particularly if the precipitating drug is administered within a short interval after radiation, and may be associated with pain and necrosis, as seen in our patient.

The classical proposal is to consider a radiation recall phenomenon when trigger drugs are given within a sufficient interval (more than 7-10 days) [4]. The median time between end of radiation therapy and drug administration is reportedly 39.5 days (range, 7-840 days) [5]. In our patient, the interval was 11 days and the eruption developed 3 days after the first chemotherapy treatment.

Re-challenge with a precipitating agent has the potential to result in a similar or more severe reaction, but does not always elicit a reaction. The patient in this case chose to continue chemotherapy at the same dose and recurrence of RRD was not observed at the 6-month follow-up.

The radiation recall phenomenon is impossible to predict and prevent, because it differs between individuals and is not drug-specific. Considering the increased use of combination radiotherapy and chemotherapy in the treatment of malignant disease, dermatologists should keep RRD in mind when cases presenting with skin rash limited to a previously irradiated area are encountered.

References

1. Burris HA 3rd, Hurtig J. Radiation recall with anticancer agents. *Oncologist* 2010;15(11):1227-37. [PMID: 21045191]
2. Lee HE, Jeong NJ, Lee Y, Seo YJ, Kim CD, Lee JH, Im M. Radiation recall dermatitis and pneumonitis induced by trastuzumab (Herceptin®). *Int J Dermatol* 2014;53(3):159-60. [PMID: 24716200]
3. Ristić B. Radiation recall dermatitis. *Int J Dermatol* 2004;43(9):627-31. [PMID: 15357739]
4. Azria D, Magné N, Zouhair A, Castadot P, Culine S, Ychou M, Stupp R, Van Houtte P, Dubois JB, Ozsahin M.. Radiation recall: A well recognized but neglected phenomenon. *Cancer Treat Rev* 2005;31(7):555-70. [PMID: 16168567]
5. Camidge R, Price A. Characterizing the phenomenon of radiation recall dermatitis. *Radiother Oncol* 2001;59(3):237-45. [PMID: 11369064]