Chemotherapy Induced Radiation Recall Reaction: A Case Report

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Abstract

Radiation recall is an acute inflammatory reaction confined to previously irradiated areas that occurs when chemotherapy agents are administered. A diverse range of chemotherapy drugs used in the treatment of cancer has been associated this phenomenon. The antineoplastic drugs for which radiation recall reactions have been most commonly reported include the anthracycline group (doxorubicin), the taxanes (docetaxel and paclitaxel), the antimetabolites (gemcitabine and capecitabine) and tamoxifen. Radiation recall is drug-specific for any individual patient; it is not possible to predict which patient will react to which drug, and re-challenge does not uniformly induce the reaction. There are no identifiable characteristics of drugs that cause radiation recall, and thus, it is a possibility that must be kept in mind with use of any drug after radiotherapy, including those from new class of drugs.

We are reporting a case of 47 year old female with left breast carcinoma, who had paclitaxel induced skin reactions following radiotherapy. She was successfully treated with steroids and local dressing. Although there is no treatment regimen to eliminate radiation recall reactions, but the risk can be minimized by prolonging the interval between completion of radiotherapy and initiation of chemotherapy.

Keywords: *Chemotherapy, Radiation therapy, Radiation recall dermatitis*

Introduction

Treatment of cancer involves the widespread use of radiotherapy in conjunction with chemotherapy. Both the treatment modalities are associated with well-described, but not always overlapping, profiles of tolerability. Although giving chemotherapy after radiotherapy can induce the phenomenon of radiation recall.

Radiation recall is an inflammatory skin reaction at a previously irradiated field subsequent to the administration of a variety of pharmacologic agents. Although skin has been the major site of radiation recall toxicity, instances involving other organ have been reported. [1,2] It was first described with the antitumour antibiotic actinomycin D but it has been observed with other classes of chemotherapy agents, including anthracyclines, alkylating agents, antimetabolites, nucleoside analog, and taxanes.[3,4] Nowadays other different classes of pharmacologic agents have also been involved in this inflammatory reaction such as antituberculosis drugs, antibiotics, tamoxifen, simvastatin and exposure to ultraviolet light can also induce it. Skin has been the major site of radiation recall toxicity [5, 6].

The observation that all the acute skin reaction settled before the commencement of further chemotherapy seems to be the radiobiological basis to affirm such an effect. When given concurrently or within 7–21 days, the reaction is the result of radiation enhancement. Tissue reactions that occur after longer periods of time between chemotherapy and radiotherapy are considered to be a radiation recall [1]. Radiation recall is much less common. It can occur months or even many years after irradiation, suggesting that the the radiation recall remains a poorly understood phenomenon. [1, 2] The aim of this review is to provide an overview of the clinical presentation and treatment of radiation recall reaction within the context of cancer management.

Case Report (clinical summary and management)

A 47 year old female diagnosed to have carcinoma of left breast in May 2012, for which left sided modified radical mastectomy (MRM) was done and histopathology report shows Infiltrating Ductal Carcinoma (IDC) followed by which patient gave history of 4 cycles of chemotherapy (no details available). Patient then defaulted for further treatment. Patient came to our centre on

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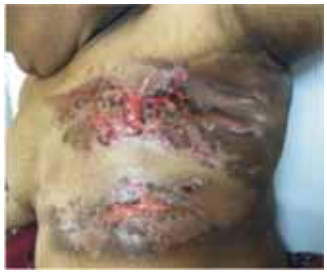
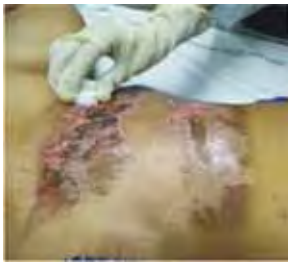
February 2017 with left chest wall recurrence. Biopsy from which was positive for IDC. The immunohistochemistry (IHC) was negative for oestrogen and progesterone receptors. Patient was planned for sandwich chemotherapy with adjuvant radiotherapy for which she received 4 cycles of CAF (Inj. Cyclophosphamide, Inj. Adriamycin and Inj. 5 Florouracil), last dose given on 4/4/2017. It was followed by radiotherapy to chest wall completed on 31/5/2017. After two weeks of gap Patient was then planned for 4 cycles of Inj. Paclitaxel. After second cycle of Inj. Paclitaxel (dated 4/7/17) patient came with grade III skin reaction over irradiated left chest wall. Patient received supportive care with corticosteroids and daily aseptic placental dressings were done. She recovered in 7 days and completed rest of the chemotherapy cycles uneventfully.

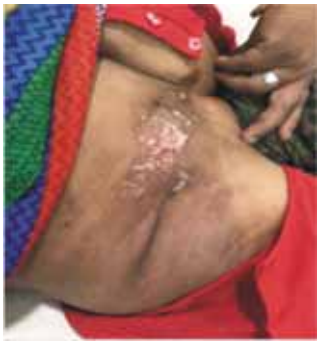
Figure 1-4: showing radiation recall reaction over left chest wall at radiation site on day 1, 3, 5 and 7.



Day 1



Day 3



Day 7

Discussion

Radiation recall is usually diagnosed through evaluation of treatment history, symptoms, and physical examination. Where internal organs are affected, assessment may include radiologic studies. Biopsies are not normally necessary.

Although no common standard treatment for radiation recall exists.Treatment depends on the organ system affected and the severity of the reaction; however, no specific therapies are available. Most instances resolve with optimal symptom management. When the reaction is not severe, it may resolve spontaneously and an approach of close observation is adequate. Supportive medical care may be needed when internal organs are affected, and surgical intervention may be necessary for severe cases [1, 2].

It is suggested to stop the inciting drug or to decrease its dose and to use topical or systemic corticosteroids, non-steroidal anti-inflammatory agents or antihistamines depending on severity and localization of the reactions. It had also found use of oral dexamethasone and diphenhydramine to subside the inflammation [3].

The most confusing aspect in the treatment of radiation recall is to decide whether to discontinue the inciting drug or not [2]. Rechallenge with a precipitating drug does not always elicit a reaction. Whether subsequent use of the precipitating agent is appropriate depends on individual circumstances, including patient preference and the extent, severity, and location of the reaction. The risk versus benefit balance and availability of alternative equally effective agents must be considered. When the radiation recall reaction is not severe, some patients may tolerate a reduced dose or even the same dose of the precipitating agent.

Whereas in our case the patient developed reaction with second cycle of chemotherapy after radiation (Sixth course of chemotherapy). We treated the patient with the use oral dexamethasone along with daily placental dressing and rechallenged with same drug and doses for remaining two cycles of chemotherapy. Premedication with corticosteroids when rechallenging may help prevent the inflammatory response, although the value of this remains unproven.

Conclusions

As radiotherapy and chemotherapy are widely used in conjunction to treat cancer, familiarity with radiation recall reactions and their potential complications may aid early diagnosis and appropriate management.

There is still much that needs to be understood about radiation recall, and it is not currently possible to predict which patients will be affected and which drugs they will react to. Although it is not yet possible to design treatment regimens to eliminate the risk of radiation recall, it seems likely that risks can be minimized by using the lowest possible dose of radiation and prolonging the interval between completion of radiotherapy and initiation of chemotherapy.

References

1. Azria D, Magne N, Zouhair A, et al. Radiation recall: a well recognized but neglected phenomenon. Cancer Treat Rev. 2005;31:555–570. [Pub Med]
2. Kharfan Dabaja MA, Morgensztern D, Markoe AM, et al. Radiation recall dermatitis induced by methotrexate in a patient with Hodgking's disease. Am J Clin Oncol 2000;23:531-3.
3. Caloglu M, Yurut-Caloglu V, Cosar-Alas R, et al. An ambiguous phenomenon of radiation and drugs: recall reactions. Onkologie. 2007;30:209–214. [PubMed]
4. Yeo W, Johnson PJ. Radiation-recall skin disorders associated with the use of antineoplastic drugs. Pathogenesis, prevalence, and management. Am J ClinDermatol. 2000;1:113–116. [PubMed]
5. Camidge R, Price A. Characterizing the phenomenon of radiation recall dermatitis. RadiotherOncol. 2001;59:237–245. [PubMed]
6. Bostrom A, Sjolin-Forberg G, Wilking N. Bergh J. Radiation recall: another call with taxoxifen. Acta Oncol 1999;38:955-59