A Case of Morphea Following Radiotherapy for an Intracranial Tumor: An Example of Isoradiotopic Response

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Indian J Dermatol 2017;62(1):92-93

Sir,

We read with great interest the report recently published in the Indian Journal of Dermatology by Balegar et al.,[1] which describes a case of a 27-year-old male who developed radiation-induced progressive generalized morphea after getting radiotherapy (RT) for an intracranial tumor. In this patient, morphea, initially strictly localized on the irradiated zone, appeared some months after the last cycle of RT, suggesting induction by ionizing radiation.[1]

Radiation dermatitis has for a long time been known to be the most fertile ground for the subsequent development of primary skin cancers on the irradiated area.[2] An irradiated area is prone to the development not only of tumors but also of opportunistic infections and immune-mediated skin disorders (as morphea), depicting a typical example of “immunocompromised cutaneous district” (ICD). Whatever the cause,[2-25] the concept of ICD refers to a skin site of locoregional immune dysregulation due to an obstacle to the normal trafficking of immunocompetent cells through lymphatic channels and/or an interference with the signals that the neuropeptides and neurotransmitters, related to peripheral nerves, send to cell membrane receptors of immunocompetent cells. Depending on which of the neurotransmitters and immune cells are involved, this destabilization could be either defective, thus predisposing to infections and tumors, or excessive, thus favoring the occurrence of some immune disorders or dysimmune reactions at the sites “marked” by prior clinical events or injury.[2]

In radiation dermatitis, the lymph network is profoundly disrupted with abnormal dilation of some vessels and obstruction of others, which results in an obvious obstacle to the trafficking of immune cells. Moreover, peripheral nerve fibers are throttled by dermal fibrosis. Therefore, the dysregulation of the immune control occurring in irradiated areas may be explained by the impaired lymph flow on the one hand and the fibrotic throttling or reduction of peptidergic nerve fibers on the other hand. Both changes locally alter the interplay between immune cells conveyed by lymph vessels and neuromediators running along peripheral nerve fibers.[3]

A recent classification of isomorphic and isotopic skin reactions has proposed a newly coined terminology to indicate each specific cause responsible for the occurrence of an ICD and has encompassed additional conditions that had not been defined previously.[15-25] According to this new categorization,[25] the report of Balegar et al. can be seen as an example of “isoradiotopic response,” that can be defined as a new skin disease that appears at site of previously diseased or injured (due to a previous irradiation) skin. In this peculiar case, morphea spread and generalized later on the abdomen, chest, and arms.

We thank the authors for giving us the opportunity to discuss such a complex and interesting topic.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

References

1. Balegar S, Mishra DK, Chatterjee S, Kumari S, Tiwary AK. Generalized morphea following radiotherapy for an intracranial tumor. Indian J Dermatol 2016;61:581.
2. Ruocco V, Brunetti G, Puca RV, Ruocco E. The immunocompromised district: A unifying concept for lymphohematous, herpes-infected and otherwise damaged sites. J Eur Acad Dermatol Venereol 2009;23:1364-73.
3. Ruocco E, Di Maio R, Caccavale S, Siano M, Lo Schiavo A. Radiation dermatitis, burns, and recall phenomena: Meaningful instances of immunocompromised district. Clin Dermatol 2014;32:660-9.
4. Bove D, Lupoli A, Caccavale S, Piccolo V, Ruocco E. Dermatological and immunological conditions due to nerve lesions. Funct Neurol 2013;28:83-91.
5. Lo Schiavo A, Caccavale S, Alfano R, Gambardella A, Cozzi R. Bullous pemphigoid initially localized around the surgical wound of an arthroprothesis for coxarthrosis. Int J Dermatol 2014;53:e289-90.
6. Lo Schiavo A, Brancaccio G, Romano F, Caccavale S. Lymphangiomas arising on lymphedema: First step of malignant development. G Ital Dermatol Venereol 2014;149:372-4.
7. Ruocco E, Lo Schiavo A, Caccavale S. Pemphigus induced by radiotherapy for breast cancer: An instance of immunocompromised district. Eur J Dermatol 2014;24:278-9.
8. Lo Schiavo A, Caccavale S, La Montagna M, Caccavale T, Gambardella A. The role of lymphatic stasis in Kaposi’s sarcoma onset. G Ital Dermatol Venereol 2014;149:731-3.
An inverse notalgia

Sir,

I am delighted that authors have shown keen interest in the earlier published report, Inverse notalgia in the Indian Journal of Dermatology 2017; 62(1):93-94. The authors have carried out a most eloquent and exhaustive review. I agree to the fact that the concept of isoradiotopic does hold good in our case. More literature refers to occurrence of a new skin disorder at the site of radiation or implantation, i.e. the primary event. The authors have thrown light on the immunocompromised cutaneous district, which led to the development of immune response the so-called “immunocompromised district,” which led to the development

9. Ruocco E, Caccavale S, Siano M, Lo Schiavo A. Radiation port cutaneous metastases: A further example of immunocompromised district. Indian J Dermatol 2014;59:302-3.
10. Lo Schiavo A, Pecerillo F, Mascolo M, La Montagna M, Caccavale T, Gambardella A, et al. Inverse notalgia paresthetica: A strange case of professional disease. Int J Dermatol 2015;54:e49-51.
11. Caccavale S, Gambardella A. Reactive angiendotheliomatosis following implantation of a knee metallic device: An instance of immunocompromised district. Int J Dermatol 2015;54:e372-3.
12. Caccavale S, La Montagna M. Uncommon superficial angiomyxoma of the vulva complicated with condyloma acuminatum and Staphylococcus hominis infection: A mere example of gynecological immunocompromised district. Int J Dermatol 2015;54:e505-6.
13. Lo Schiavo A, Caccavale S, Alfano R, Puca RV, Cozzi R. Elephantiasis nostras verrucosa: A rare case of thyroid dermopathy. Indian J Dermatol Venereol Leprol 2012;78:650-2.
14. Lo Schiavo A, Alfano R, Caccavale S. Elephantiasis nostras verrucosa in a patient with obesity and chronic venous insufficiency. Int J Dermatol 2013;52:461-2.
15. Caccavale S, Kannangara AP, Ruocco E. The immunocompromised cutaneous district and the necessity of a new classification of its disparate causes. Indian J Dermatol Venereol Leprol 2016;82:227-9.
16. Caccavale S, Caccavale T, La Montagna M. Varicella within a prior immunization reaction site: Another example of “isovaccinetopic response”. Pediatr Dermatol 2016;33:357-8.
17. Caccavale S, Caccavale T, La Montagna M. Post herpes zoster trigeminal trophic syndrome in a child: An example of immunocompromised district. Indian J Dermatol 2016;61:124.
18. Caccavale S, La Montagna M, Caccavale T. Isoscartopic response: Another facet of the immunocompromised cutaneous district. Indian J Dermatol 2016;61:219-20.
19. Caccavale S, Squillace L, Ruocco E. Tattoo-induced psoriasis: An umpteenth example of immunocompromised district. Int J Dermatol 2016;55:e511-2.
20. Caccavale S, Caccavale T, La Montagna M. Pustular psoriasis occurring on the striae distensae: An umpteenth example of immunocompromised cutaneous district. Indian J Dermatol 2016;61:565-6.
21. Caccavale S, Caccavale T, La Montagna M. Facial flat warts in a young patient with a previous trauma: An example of isotraumatopic response. Int J Dermatol 2016;55:e568-9.
22. Caccavale S, Di Mattia D, Ruocco E. Loco-regional immune default: The immunocompromised district in human and comparative dermatology. Clin Dermatol 2016;34:654-7.
23. Caccavale S, Caccavale T, La Montagna M. Hidradenitis suppurativa associated with squamous cell carcinoma: An example of an isoscartopic response. Int J Dermatol 2016;55:e629-31.
24. Caccavale S, Caccavale T, La Montagna M. Lichen planus after rabies vaccination: An example of isovaccinetopic response. Int J Dermatol 2016. [Epub ahead of print].
25. Caccavale S, Kannangara AP, Ruocco E. Categorization of and comments on isomorphic and isotopic skin reactions. Clin Dermatol 2015. [Epub ahead of print].