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## Case Report

# Autoeczematization during radiation therapy – An unforeseen crumble

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### ABSTRACT

Radiation induced acute skin reactions are common and an expected effect of radiotherapy. Radiation induced Eczematous eruptions, however, are rarely reported, with subsequent distant site eczema being infrequently seen and likely under recognized. The mechanism of autosensitization is poorly understood but seems to involve a cell-mediated immune response. Recognition is important to prevent excessive and inappropriate investigation and treatment. To the best of our knowledge and search, there are not many cases of such an autoimmune reaction to the radiation therapy. We present a unique case of eczematous reaction following 13 fractions of external beam radiotherapy in a case of non small cell carcinoma lung.

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## 1. Case Report

A 73 year male who is a diagnosed case of non small cell carcinoma left lung with no known co-morbidity received 3 cycles of chemotherapy with Inj. Pemetrexed and Inj. Carboplatin had been referred to the OPD for radiation therapy. PET CT showed metabolically active pleural based soft tissue mass lesion in left lobe of lung (~ 2.8 x 4.1 x 4.6 cm with SUV max= 5.9). Patient was taken up for external beam radiation therapy to a dose of 60Gy/30 fractions at 2Gy per fraction by volumetric modulated arc therapy technique with 6MV X-rays. Patient developed eczematous skin lesion over bilateral hands after receiving 13 Fractions. The lesion appeared as scattered patchy macules and papules with thin raised plaques and peeling of skin that were non pruritic over his hands bilaterally (Figure 1). Radiation therapy was halted with immediate effect and a dermatological opinion was taken. Patient was advised topical steroids and the ezema subsided in a week (Figure 2).



**Fig. 1:** Autoeczematization or ID reaction developed over bilateral hands after 13 fractions of EBRT to the primary lung lesion.

## 2. Discussion

Autoeczematization or id reaction, is a disseminated eczematous reaction that occurs due to a release of antigen(s) after exposure to a primary stimulus, with the eczema spreading to a site distant from the original one. Whitfield<sup>1</sup> first described the phenomenon in 1921, when he postulated that it was due to sensitization of the skin

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**Fig. 2:** Reactions subsided after one week of topical treatment.

after a primary stimulus. He called it “a form of auto-intoxication derived from changes in the patient’s own tissues.”<sup>1</sup> It develops at the cutaneous sites away from a primary inflammation focus and where the secondary acute dermatitis is not explained by the cause of the initial inflammation. Factors such as infection, trauma, irritant chemicals, and ionizing radiation are known to precipitate autosensitization.<sup>2</sup>

The pathogenesis of autosensitization dermatitis is thought to be related with increased HLA-DR- and IL-2R-positive T lymphocytes<sup>3</sup> with the elevated ratio of helper to suppressor T lymphocytes<sup>4</sup> and with hematogenous dissemination of epidermal cytokines from a primary focus.<sup>5</sup> In our case of primary lesion of lung being treated with radiation therapy developed autoeczematization in bilateral hands i.e area distant from the radiation field.

### 3. Conclusion

We postulate that T cells are reactive to keratinocyte antigens that are produced during keratinocyte damage, which induce this autoeczematization. Recognition is important to prevent excessive and inappropriate investigation and treatment. Studies with current technology are needed to facilitate further understanding of this phenomenon. Given the rarity of such reactions during radiation therapy, this case report will definitely add a

much-needed view point to treating oncologists towards investigating and managing similar cases. Furthermore, prospective case reports are warranted to confirm the diagnosis, mechanism and prevention.

### 4. Conflict of Interest

None.

### 5. Source of Funding

None.

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