

Erythrodermic Psoriasis Post Radiation Treatment: A Case Presentation and Literature Review

With limited coverage in the literature, erythrodermic psoriasis post radiation deserves further study.

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Psoriasis is a chronic relapsing skin disease that takes on a wide spectrum of clinical morphology and courses. The cutaneous diagnosis can usually be made by a “visually literate” physician, yet deeper effects often traverse the skin and influence both the emotional and social aspects of a patient’s life.¹ This report illustrates a case of a patient who developed erythrodermic psoriasis after a combination of radiation treatment and a lumpectomy for breast cancer. With minimal current publications on this topic, our hope is to uncover some of the enigmatic features of psoriasis by presenting evidence and developing a foundation in which further investigation could benefit patients.

Case Report

A 68-year-old African-American female presented to the office with a five-week history of diffuse erythroderma along with orange-salmon colored erythema and overlying scale with some islands of sparing. The patient had noticed a greater involvement since the onset five weeks prior and admitted to xerosis and pruritis while denying swollen joints and nail changes. Patient had a history of plaque psoriasis that was first diagnosed in February 2008 and treated with etanercept (Enbrel, Amgen/Pfizer) four times and topical steroids according to the patient. Patient stated that by the summer of 2008 her psoriasis had remitted close to 100 percent. In December 2008, the patient was diagnosed with breast cancer of unknown type and subsequently treated with a lumpectomy in February 2009 followed by radiation treatment. Six weeks prior

to her current presentation, the patient had completed radiation treatment for her breast cancer that had been issued intermittently for approximately three to four months. Patient has no family history of psoriasis and past medical history is as above.

A 4mm punch biopsy was obtained from the left forearm using both lesional and perilesional skin for H&E and immunofluorescence studies. The biopsy report revealed parakeratosis, a pale staining epidermis, hypogranulosis, psoriasiform acanthosis, superficial dilated blood vessels, and Munro microabscesses. Patient was given Avene spray (Pierre Fabre) to be applied twice a day for a calming and soothing effect followed by the application of Betamethasone Dipropionate augmented cream 0.05% applied twice a day for two weeks and told to return in two weeks. Upon follow up, patient was started on narrow band UVB therapy at 350 joules, increasing at 60-joule intervals two-to-three times weekly. Patient tolerated light therapy without any complications and positive results were seen at later appointments.

Histopathology

Skin biopsies of erythrodermic psoriasis are commonly unrewarding, and it can be difficult to discern an etiologic diagnosis.² Classical histology findings include a resemblance to early lesions of psoriasis with mild epidermal hyperplasia, red blood cell extravasation in the papillary dermis, mounds of parakeratosis with few neutrophils, and dilated blood vessels in the upper dermis.^{2,4} Broken down into layers, the epidermis will demonstrate mild spongiosis, moderate acanthosis,



Figs. 1-3. Patient at initial presentation.

Figs. 4-6. Patient post narrow band UVB treatment.

and possible psoriasiform hyperplasia.^{2,3} The upper dermis can have a considerable chronic inflammatory cell infiltrate with occasional exocytosis of lymphocytes.^{2,3}

Discussion

Erythrodermic psoriasis is a severe, unstable, highly labile disease that is characterized by widespread erythema, edema, superficial desquamation, and systemic signs.^{3,4} Less than 2.5 percent of psoriasis cases comprise an erythrodermic pattern, yet there is a substantial increase in risk for morbidity and mortality when compared to the more common forms.⁵

With a wide range of severity and acuity, the majority of cases feature greater than 75 percent inflammation of body surface area.⁶ This systemic inflammatory response may appear as the initial manifestation of psoriasis, however it usually occurs in patients with previous chronic disease. The differential diagnosis includes but is not limited to plaque psoriasis, pityriasis rubra pilaris, cutaneous T-cell lymphoma, pemphigus foliaceus, contact dermatitis, lichen planus, and

seborrheic dermatitis.^{4,6} Provocative factors range from systemic and topical steroids to heightened emotional stress and preceding illness, such as infection.⁴ Our case demonstrates the incidence of erythrodermic psoriasis post radiation therapy for breast cancer.

To date, there is a paucity of literature describing this association, creating an uncharted path in which we can expand our efforts to formulate more facts and new hypotheses. Nevertheless, there is evidence of an association between radiation therapy and cutaneous side effects.⁷ This phenomenon occurs more commonly in patients with incidental skin disorders and can be traced back to 1876 when Heinrich Koebner first described the development of psoriatic lesions following an injury to clear skin on a patient with psoriasis.

By definition, the Koebner phenomenon is an isomorphic cutaneous response to trauma of normal appearing skin.⁷ It is thought that radiation therapy may initiate skin damage and promote Koebnerization.⁷ The few case reports that exist regarding the occurrence of psoriasis post radiation therapy in breast cancer patients paint a portrait of a

cutaneous response only locally in the irradiated fields. One case described by Charalambous and Bloomfield entails a patient with breast cancer that manifested a florid erythema over the entire irradiated breast four weeks post radiation treatment.⁸ In a different case, Tomlinson highlights a breast cancer patient who received a mastectomy followed by radiation treatment.⁹ Six weeks following the completion of radiation therapy, the patient had a flare up of psoriasis in the irradiated area while the non-irradiated area remained unblemished.⁹

A third case of Koebnerization is illustrated by Schreiber, who reported on a patient with metastatic lung cancer to the femur.¹⁰ Two weeks after receiving radiotherapy of the femur, the patient experienced a significant local psoriatic reaction.¹⁰ Interestingly, the majority of cases transpired between two to six weeks post radiation therapy, a time frame that matches our patient's manifestation at six weeks. Compared to these reports, our case is unique in that the patient developed a generalized response instead of the aforementioned local reactions.

These patients, much like those who have sustained burns, must be treated aggressively due to an increased risk of infection, severe dehydration, and electrolyte imbalance. Currently, there is a lack of quality scientific evidence on which to base a treatment regimen for erythrodermic psoriasis.⁵ With this in mind, treatment considerations are centered around the severity of disease at the time of presentation as well as a patient's comorbidities.

First line agents include the rapidly acting cyclosporine and infliximab (Remicade, Janssen Biotech), as well as the slower acting acitretin and methotrexate.⁵ Topical therapy should be implemented with systemic treatment as encouraged by the medical board.⁵ Furthermore, physicians can also choose combination therapy in cases that are acutely severe with a need for urgent control or in patients that are refractory to single agents alone.⁵ Combination therapy may be more effective than monotherapy; however there is a scarcity of data to support this.⁵

Although UV light therapy is a buttress of psoriasis management, it should be used cautiously in acute erythrodermic cases. There are case reports of UV-

induced erythroderma as well as an increased risk of a Koebnerization-like response.⁵ There have been positive results of Psoralen plus UV therapy in erythrodermic psoriasis, but prudence must be taken to avoid flare precipitation in these sensitive patients.⁵

In summary, erythrodermic psoriasis is a serious and complex disease that still requires further investigation and a novel approach in regards to etiology and treatment considerations. From a review of the literature, we believe that there is a positive correlation between radiation therapy and psoriasis development through a Koebnerization response. By publishing case reports and propagating creative discussions, our ambition is to build upon what we do know and question what is still unknown. ■

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practicaldermatology.com/articles/2011-â€¦; Radiation weapon imprint? It was ETCHED in2 the glass. I could not wipe it off on either side. It magically disappeared after I posted it on social media. Etchings can apparently be removed using chemical lasers. I sleep on the floor where this was hitting. Erythrodermic psoriasis is a rare type of psoriasis affecting about 2 percent of people living with psoriasis. Learn about the symptoms and your treatment options.Â Erythrodermic [eh-REETH-ro-der-mik] psoriasis often affects nearly the entire body and can be life-threatening. Erythrodermic psoriasis disrupts your body's normal temperature and fluid balance. This may lead to shivering episodes and edema (swelling from fluid retention) in parts of the body, such as in the feet or ankles. You may also have a higher risk of infection, pneumonia and heart failure. See a health care provider immediately if you are experiencing the following symptoms: Severe redness/discoloration and shedding of skin over a large area of the body.