# Photo-distributed Toxic Epidermal Necrolysis in a Young Female on Lamotrigine: A Case Report

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## Background

Toxic epidermal necrolysis (TEN) is an uncommon life-threatening disease characterized by extensive epidermal necrosis involving greater than 30% of body's surface. A paucity of literature exists describing TEN in a photo-distributed pattern.

## Learning Objectives

**At the conclusion of this activity, participants will be able to recognize an association between TEN and UV light exposure, furthering understanding of the complex interplay between T cells, UV radiation, drug metabolism, and the pathophysiology of this life-threatening disease.**

## Patient Presentation

A 22-year-old female with a past medical history of bipolar disorder and habitual tanning bed use presented to the hospital for evaluation of a pruritic, erythematous eruption that originated on her upper back. Over the next 3 days, it progressed to the rest of her torso, extremities, and palms. She had begun taking lamotrigine 10 days prior to onset and denied taking any other medications. She reported daily tanning bed use until onset of her symptoms.

Shortly after hospital admission, she developed conjunctival injection, bullae along the vermillion lips, pain of the oral mucosa, dysuria, and a sense of swelling in her genitalia. Out of concern for Stevens Johnson Syndrome(SJS)/TEN, treatment was initiated with 5 mg/kg/day of PO cyclosporine BID and triamcinolone 0.1% ointment to all affected areas BID. Punch biopsies for hematoxylin & eosin staining confirmed the diagnosis. Her symptoms continued until day 5 of hospitalization. Redness and blistering involved most of the torso but interestingly spared photo-protected areas corresponding with a bathing suit worn during tanning sessions. After day 5, her symptoms began to improve and cyclosporine was discontinued. She was subsequently discharged on day 14 of hospitalization.

## Patient Presentation (Continued)

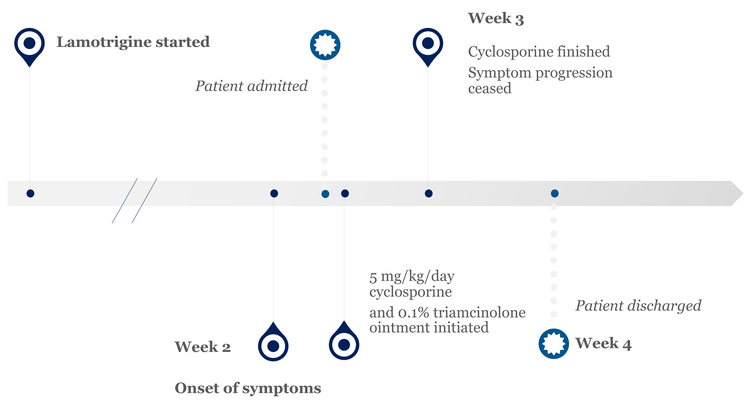


**Figure 1**. Extensive eruption of flaccid vesicles and bullae on a dusky base, generally sparing regions typically covered by undergarments or a bikini.

## Discussion

- TEN resides at the severe end of the SJS/TEN spectrum. It is considered high risk for significant morbidity and mortality, even when managed in an ICU setting.
- 80-95% of TEN cases are associated with medications.
- The few existing case studies documenting photo-distributed TEN report association with clobazam, naproxen, or hydroxychloroquine.[2,3,4]
- Multiple theories have been proposed to describe the pathogenesis of photo-distributed TEN. Proposed mechanisms describe the role of phototoxic metabolites of culprit medications, resident memory T cell activation, UV induced Koebnerization, and alteration of ICAM-1 expression in UV exposed keratinocytes, prompting CD8+ lymphocyte trafficking.

## Conclusion

- These findings suggest that UV radiation may modify the pathophysiologic mechanisms of SJS/TEN by way of altering drug metabolism, T cell response and/or expression of inflammatory markers.
- However, the exact mechanism by which UV light influences development of SJS/TEN remains uncertain. Further research is necessary to elucidate factors involved in the pathogenesis of photodistributed SJS/TEN.

## References

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