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Effects of Phototherapy in Patients with Atopic Dermatitis

Stephanie Krogen
University of North Dakota

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Stephanie Krogen PA-S
Department of Physician Assistant Studies, University of North Dakota School of Medicine & Health Sciences
Grand Forks, ND 58202-9037
Contributing Author Jay Metzger PA-C

UND School of Medicine & Health Sciences
University of North Dakota

Abstract

Atopic dermatitis is a chronic remitting problem faced by many people in our communities of all ages. Atopic dermatitis (AD) presents as an erythematous and pruritic rash. There is no cure, only treatments that help alleviate symptoms. The purpose of this literature review is to help determine the best course of action for treatment for patients who suffer from AD. Phototherapy has been growing in popularity and research as an alternate treatment to systemic and pharmacologic therapies. This review was done using PubMed, Clinical Key, DynaMed, and Cochrane. Studies were included that reviewed the side effects and efficacy of each treatment option, as well as evaluated patient preference and adherence to treatment. There were also meta-analyses used that compared studies done on various treatment modalities safety and efficacy that were included. There were no restrictions on date of articles that were included. The review showed that phototherapy is an effective option to treat symptoms of AD but should be reserved as a second line option after a patient has tried and failed topical therapy. Systemic pharmacologic therapies are also considered a second line option. Systemic therapies have a greater side effect profile than phototherapy does. Phototherapy has been shown effective, but long term it is better and more sustainable to use systemic pharmacologic options to treat and control AD.

Introduction

Atopic dermatitis is a common disease that causes many problems in communities worldwide. It presents typically in childhood and is a chronic condition with no cure. Symptoms include pruritus , erythema, dry skin, and scaling. Treatment modalities include topical medications, oral or systemic preparations, and phototherapy. Each treatment modality has their own advantages and disadvantages. It was observed that patients with AD experienced some relief during the summer months; which sparked an interest in the research of ultraviolet light as a treatment for AD.

"UV Series." *Daavlin Phototherapy Solutions for Psoriasis & Vitiligo*, 2020, www.daavlin.com/patients/phototherapy-products/uv-series-full-body-surround/#tab product-breakdown.

Statement of the Problem

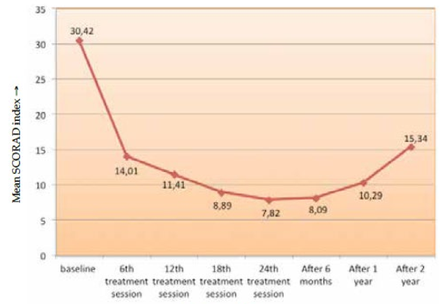
There is no cure for AD. It is a chronic and remitting problem that requires long term management. AD affects about 25% of children worldwide. Topical treatments are considered first line therapy. Oral and systemic medications are then used if topical therapy fails. An alternative form of treatment called phototherapy is a non pharmacologic option to aid in the treatment of AD. Phototherapy has many variations, so it is important to chose the correct one for each patient.

Research Questions

- How effective is phototherapy as compared to pharmacologic treatments for treating patients with atopic dermatitis?
- What are the side effects seen in patients with atopic dermatitis who are treated with phototherapy as compared to side effects of pharmacologic treatments?

Literature Review

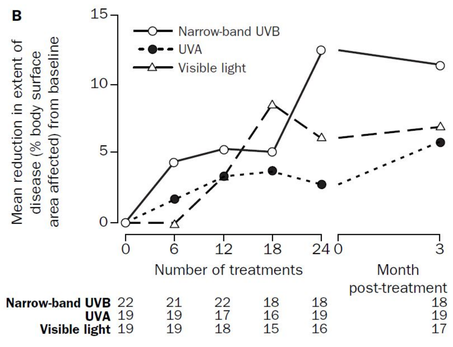
- Narrowband-UVB was the most widely used and thought to be most effective (Reynolds et al., 2001).
- Most common side effects of phototherapy include skin burning, pruritus, tenderness, and erythema (Pavlovsky et al., 2011).
- NB-UVB has the least erythemogenic potential and the least risk for side effects (Ortiz-Salvador and Perez-Ferriols, 2017).
- Longer term effects can include photo-aging and more serious effects include malignancies or lupus flares (Ortiz-Salvador & Perez-Ferriols, 2017)
- Topical therapies are first line treatment. If the patient fails to respond to topical treatment, they move to systemic treatments (Ohtuski, Morimoto, & Nakagawa, 2018)
- When comparing topical therapies, it was found that TAC-O are more effective in treating AD than TCS (Ohtuski et al., 2018).
- Topical calcineurin inhibitors and pimercrolimus cream have very similar side effect profiles, with the most common side effects being burning at application site and secondary infections.
- Topical corticosteroids most common side effects include cutaneous atrophy, dyspigmentation, and perioral dermatitis (Glines et al., 2019).
- Topical preparations have a black box warning for lymphoma as well as skin cancer, but the evidence for these claims is lacking (Glines et al., 2019).
- Shah et al. (2018), found that methotrexate is an effective second line option to treat AD and does show significant improvement in AD symptoms when compared to a placebo.
- Systemic treatment options such as cyclosporine and methotrexate require routine lab monitoring during treatment due to their side effect profiles. Some side effects of these include hepatotoxicity, nephrotoxicity, infection, and malignancy (Davis et al., 2017).
- Dupliumab is a new subcutaneous injectable that has relatively few side effects, the most common being injection site reactions (Davis et al., 2017)
- There are many reasons patients are not compliant including forgetfulness, unable to afford medications, inconvenient, delayed results, and not understanding the significance of compliance (Patel et al., 2017).
- Education is a huge aspect of patient compliance and with increased education patients are more likely and more willing to use the therapy as prescribed (Patel, et al., 2017).



Dayal, S., Pathak, K., Sahu, P., Jain, V. (2017). Narrowband UV-B phototherapy in childhood atopic dermatitis: efficacy and safety. *Anais Brasileiros de Dermatologia*, *92*(6), 801–806. https://doi.org/10.1590/abd1806-4841.20175958

Discussion

- Phototherapy is an effective treatment strategy for the reduction of symptoms for patients who have AD
- Phototherapy should be reserved as a second line treatment.
- Narrowband-UVB was the most widely used and thought to be most effective
- In general, phototherapy takes about 6 -12 weeks to see results and usually requires treatments at least three times a week
- Phototherapy overall has a very limited side effect profile. The most common side effects of phototherapy are mild, local, and transient with only a few serious side effects to be cautious of
- Topical therapies are first line treatment. If the patient fails to respond to topical treatment, they move to systemic treatments
- Topical preparations side effect profile includes burning at application site and secondary infections
- Systemic treatment options such as cyclosporine and methotrexate require routine lab monitoring during treatment due to their side effect profiles
- When choosing a treatment option for patients it is important to consider their needs and availability.
- It is essential that the patient is compliant with therapy. If the patient is not willing nor able to follow the treatment plan as prescribed by the provider, the patient will not see the full potential benefits of the therapy.
- Education is a huge aspect of patient compliance and with increased education patients are more likely and more willing to use the therapy as prescribed and patients are more compliant when they are held accountable.



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Applicability to Clinical Practice

- Providers will be able decide which treatment option is best for their patients with AD
- It is important to individualize treatment regimens
- Phototherapy is an option for AD sufferers but should be reserved as a second line treatment
- Patients first need to have tried and failed topical therapy. Once a patient fails topical therapy then the provider must decide if they want to try systemic medications or phototherapy
- Phototherapy has a less extensive side effect profile than all other systemic options do
- Systemic therapies have been shown to be more effective at treating AD symptoms
- Also consider patient preference, affordability, and accessibility to treatment

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