OASIS DERMATOLOGY GROUP

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Phototherapy: UVB

Ultraviolet B (UVB) phototherapy is a well-established treatment for various skin conditions, utilizing artificial ultraviolet light to manage skin disorders such as psoriasis, eczema, and other inflammatory dermatologic diseases. UVB rays, which are part of the sun's ultraviolet spectrum, have intermediate energy levels, situated between UVA (which is primarily responsible for tanning) and UVC (which has germicidal properties but is blocked by the Earth's atmosphere). UVB light, although responsible for sunburn, is also used therapeutically under controlled conditions to modulate immune responses in the skin, offering significant benefits for patients with specific skin diseases.

Mechanism of Action

UVB phototherapy exerts its therapeutic effects by modulating the immune cells in the skin, particularly the T-lymphocytes, which are overactive in many dermatologic conditions like psoriasis and eczema. Exposure to UVB light causes DNA damage in these immune cells, leading to apoptosis and a reduction in the inflammatory response. This process helps to normalize the skin's immune function, resulting in reduced scaling, inflammation, and thickening of the epidermis. UVB light can also inhibit the proliferation of keratinocytes, the cells responsible for the abnormal growth patterns observed in skin diseases such as psoriasis.

Indications and Applications

UVB phototherapy is used primarily for the treatment of skin diseases that involve hyperactive immune responses. The most common conditions treated with UVB include:

- ***Psoriasis***: UVB phototherapy is considered the treatment of choice for moderate to severe psoriasis (affecting more than 20% of the body surface area) when topical therapies fail to provide adequate control. It is particularly effective for chronic plaque psoriasis.
- ***Atopic Dermatitis (Eczema)****:* For patients with severe or refractory eczema, UVB phototherapy is often used as an adjunct to topical treatments to reduce inflammation and itching.
- ***Pruritus***: UVB can also be used to manage generalized itching associated with conditions like chronic urticaria or systemic diseases that cause skin irritation.
- ***Other Conditions****:* UVB has been used off-label to treat conditions such as vitiligo, cutaneous T-cell lymphoma, and lichen planus.

Treatment Protocol and Procedure

UVB phototherapy is typically administered in a clinical setting, such as a hospital or specialized dermatology clinic. The treatment schedule usually begins with three sessions per week, gradually increasing the duration of each exposure to UVB light as the patient's skin becomes accustomed to the therapy. Initial sessions involve brief exposures (usually 1-2 minutes), which are progressively lengthened to a duration where the skin develops a slight redness or pinkness.

The typical treatment course consists of 20 to 30 sessions. Once the condition is controlled, maintenance therapy, often on a weekly basis, may be recommended to sustain the results. For chronic conditions like psoriasis, maintenance phototherapy can help prevent flares and manage the disease long-term.

Side Effects and Risks

While UVB phototherapy is generally well-tolerated, it carries potential side effects, most of which are mild and transient:

- ***Sunburn***: A mild sunburn-like reaction is common and typically occurs within 6-8 hours after treatment. This redness or discomfort usually subsides within a few days.
- ***Tanning and Pigmentation Changes****:* Patients may develop a tan after multiple treatments, with some experiencing patchy white or brown spots on the skin, particularly in areas of previous scarring or pigmentation changes.
- ***Skin Aging and Increased Skin Cancer Risk****:* Chronic UVB exposure, similar to natural sunlight, can contribute to premature skin aging (photoaging) and increase the risk of skin cancers, particularly non-melanoma types such as basal cell carcinoma and squamous cell carcinoma. Thus, the therapy is carefully dosed to minimize such risks.
- ***Hypersensitivity***: Some patients may experience increased sensitivity to UVB light due to medications or existing skin conditions, necessitating dose adjustments and additional protective measures.

Patient Preparation and Safety Considerations

Before initiating UVB phototherapy, patients must inform their healthcare provider about any medications they are taking, as some drugs (e.g., certain antibiotics, diuretics, or antifungal medications) can increase photosensitivity and may require adjustments to the treatment plan. Additionally, patients should avoid applying topical treatments, such as corticosteroids or emollients, to the affected areas immediately before UVB therapy, as these can affect the skin's response to light.

During each session, protective goggles should be worn to shield the eyes from potential UV damage, and the groin area should be covered to minimize unnecessary exposure. Patients should

also apply sunscreen with a broad-spectrum SPF of 30 or higher to exposed areas such as the face and hands to prevent burns from incidental sun exposure.

Conclusion

UVB phototherapy remains a cornerstone of dermatologic treatment for conditions such as psoriasis, eczema, and pruritus, offering significant therapeutic benefits with a generally favorable safety profile when administered under proper medical supervision. Although side effects such as mild sunburn and pigmentation changes are common, severe complications are rare when treatment guidelines are followed.

References

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