Commentary on "Role of phototherapy in the era of biologics"

The article "Role of phototherapy in the era of biologics" underscores the safety and efficacy of an established treatment among exponentially increasing options.[1]

In this review, it was stated that narrowband ultraviolet B (NB-UVB) in conjunction with biologics has been considered safe. Our findings raise questions about this opinion, particularly for anti—tumor necrosis factor (TNF) agents.[2]

Prolonged immunosuppression by ultraviolet radiation significantly increases the risk of skin cancers. In the transplantation literature, the cumulative incidence of skin cancers has ranged from 40% to 70% at 20 years.[3] UVB is particularly responsible for the immunomodulatory features of phototherapy; thus, the combination of immunosuppressive agents with relatively safe—considered NB-UVB should also be evaluated with caution.

TNF-α has been implicated in photocarcinogenesis,[4] so it was hypothesized that anti-TNF agents might provide protection against the effects of DNA damage induced by UVB irradiation. Faurschou et al[5] investigated the effects of TNF-α and infliximab in UVB-irradiated HaCaT keratinocytes and, as an interesting finding, both groups showed increased levels of DNA damage compared to that of the control group.[5]

Our research group conducted a study in SKH-1 mice to test the potential of several immunosuppressive agents (infliximab, etanercept, and cyclosporine) to enhance UVB-induced carcinogenicity.[2] For the initial 10 weeks, mice were irradiated by a targeted UVB device. The spectral output of this device peaks at 302 nm and 312 nm, with an average wavelength of 304 nm. A predetermined minimal erythema dose was applied thrice per week before the administration of treatment agents. The combination of the experimental drug and phototherapy was continued for an additional period of 14 weeks. Drug doses were based on published effective doses in rodents, and the frequency of the applications was reproduced from the scheme for patients with psoriasis. In a total experimental period of 24 weeks, higher tumor burden and keratinocytic neoplasia numbers were detected in the etanercept group. The lack of statistical significance for other active treatment groups might be related to the small group sizes. While the results cannot be extrapolated to the human situation, caution is advised. Additionally, the light source and the timing of phototherapy were different from the clinical scenario because in studies evaluating this combination, NB-UVB phototherapy was initiated with the introduction of anti-TNF agents, and cessation of phototherapy was considered in the third month.

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